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An Experimental Investigation of Palatalization in Russian Loanwords

by

Benoît Brière

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts

in

Russian Linguistics

Department of Modern Languages and Comparative Studies

Edmonton, Alberta

Spring 1996

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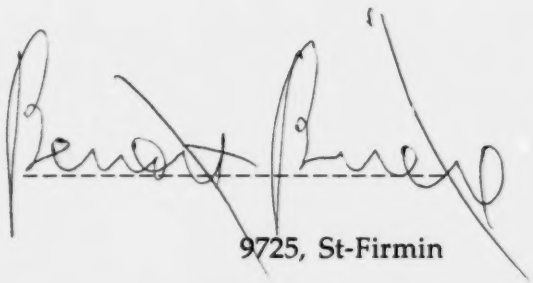

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Tom M. S. Priestly

Kyril T. Holden

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January 30, 1996

À mon zèbre d'amour

Abstract

In this thesis we study the palatalization of consonants before the vowel letter **e**, i.e. the phoneme /e/, in Russian loanwords, in order to determine if a consonant's quality (its manner and type of articulation) and its position in relation to stress influence the choice of Russian speakers to palatalize this consonant or not. In order to minimize the importance of the history of individual words we chose to only examine 30 or so loanwords with at least two syllables containing possibly palatalized consonants before an **e**, and furthermore to concentrate on the comparison of those consonants within one and the same word. After submitting our palatalization judgments to be validated by a panel of Russian speakers, we had to downsize our data because of differences in palatalization perception. In the end, results seem to show that there is a natural ordering of consonants, from the least likely to be palatalized before **e** in loanwords to the most likely.

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List of Abbreviations and Definitions

A) Definitions

The following terms are used throughout this thesis and, while their definition can be found in mathematical reference works, we define them here to ensure there are no misunderstandings.

Approximation: type of relation between two terms, e. g. X and Y, which we can mathematically describe as $X \approx Y$.

Equation: type of relation between two terms, e. g. X and Y, which we can mathematically describe as $X = Y$.

Inequation: type of relation between two terms, e. g. X and Y, which can take one of the following four mathematical representations: $X > Y$, $X \geq Y$, $X \leq Y$ or $X < Y$.

Other terms will be defined in the course of the thesis.

B) Abbreviations

We use the following abbreviations in the course of this thesis.

The following are first introduced on page 27, Chapter 3.

é: a stressed **e**.

ê: an **e** in the first pre-tonic syllable.

ĕ: an **e** in a pre-tonic syllable other than the first.

F: the rate of assimilation to palatalization of **ф/в**. Similarly, M, N, P, R, S and T wil stand for the rates of **м**, **н**, **п/б**, **р**, **с/з** and **т/д**, respectively.

Fé: the rate of assimilation to palatalization of **ф/в** before an **е** in a stressed syllable. Combinations of every capital letters standing for rates of assimilation with any of é, ê or ĕ will similarly stand for the assimilation rates of the corresponding Russian consonant in front of **е** in different types of syllables.

Our final abbreviation is first introduced and defined on page 5:

PC: a Palatalizable Consonant.

1 - Introduction

A - Goals

The object of this thesis is to study the palatalization of consonants before the vowel letter **e**, i.e. the phoneme /e/, in Russian words of foreign origin. We will try to determine if a consonant's quality (its manner and type of articulation) and its position in relation to stress influence the choice of Russian speakers to palatalize this consonant or not when pronouncing a loanword in a normal (not relaxed, not elevated or too careful) style of speech. In order to minimize the importance of the history of individual words, i.e. to achieve results that depend as much as possible on a consonant's quality and position, and as little as possible on the register of a word or on the date it was borrowed, we will only examine loanwords with at least two syllables containing possibly palatalized consonants before an **e**, and furthermore we will concentrate on the comparison of those consonants within one and the same word. To use terms that will be defined later, we say that we want to compare the rates of assimilation of Russian consonants where palatalization is concerned. We will also have to make a rather unrealistic assumption: A given speaker will tend to make the same choices (whether to palatalize a given consonant or not) for a given word X every time he or she will utter said word X. This assumption is unrealistic because the degree of uncertainty in a speaker with regards to palatalizing a consonant or not can be very high when this speaker is faced with the task of uttering certain words of a limited usage. But our assumption is nevertheless necessary because, for technical and logistical reasons, we could not conduct repeated interviews of our informants.

B - Overview

Loanwords have been studied in Russian from different points of view. The origins, meaning and general lexical descriptions of loanwords have been the subject of dictionaries of loanwords such as Lexin and Petrov (1954) but have also been touched upon by authors of other dictionaries, at least partly dealing with borrowings: dictionaries of neologisms, of which Kotelova and Sorokin (1971) is an example, and etymological dictionaries such as Vasmer (1986). There is also a small section devoted to the peculiarities of pronunciation of Russian loanwords in handbooks and dictionaries of Russian phonetics. An example of this is Avanesov (1984), which is a complete course in contemporary Russian phonetics, covering everything from the basic sound system of Russian to the peculiarities of pronunciation of certain personal names. This handbook is a rich source of examples, both illustrating the rules and showing exceptions to them.[1] Its material was based on Avanesov and Ožegov (1960), a dictionary listing every word with exceptional features in pronunciation, accentuation or declension. Avanesov (1983) is an updated and reworked version of the Avanesov and Ožegov (1960). One last handbook of Russian phonetics devoting some sections to loanwords is Panov (1990), which describes the Russian phonetic system diachronically, from the XVIIIth century to the present. The majority of these works are prescriptive in nature: they endeavor to show their readers how to correctly pronounce certain words, including loanwords, which are considered as being exceptions to the "normal" pronunciation of Russian. Descriptive studies of the pronunciation of loanwords include Holden (1980 and 1982), which are concerned with foreign vowels, how they are perceived by Russians and how they are rendered in borrowings. Waight (1980 and 1981)

[1] And these exceptional features are often found in loanwords, but it is not the intention of the author to study loanwords exclusively.

discuss phonetic and phonological aspects of loanwords. In Waight (1981) only non-Russian sound features are discussed (nasal vowels, diphtongs, etc.), while in his earlier work this author set out to prove that we do not need to recognize a separate phonological subsystem for loanwords. Glovinskaja (1976), for her part, tried to identify and isolate the socio-linguistic variables which might influence the pronunciation of specific consonants and vowels in loanwords. For the present thesis, we adopted a methodology suggested in large part by Holden (1976); in particular, acknowledgment of the necessity to measure relative rates to validate our results is a direct consequence of Holden's Magnetic Attraction Hypothesis.[2] In his article, Holden was interested in non-palatalized consonants before **e**, but also in other features of pronunciation found in Russian loanwords, such as unreduced **e** and **o** in unstressed syllables, with which we have chosen not to work. The definitions of degree and rate of assimilation to be found in Chapter 2, and the postulate that ordering relative rates of assimilation is a transitive relation, put forth in Chapter 3, also owe a great debt to concepts found in Holden (1976: 132-133, 136). For his article, Holden relied on data compiled by Glovinskaja (1971: 93-94), who tested for a broader range of phonetic features, all characteristic of borrowings. Thirty-eight loanwords used by Glovinskaja could have been used by us, as they allow for comparison between two or more consonants before an **e**. In the end, we decided to proceed independently: if some target-words were retained by us that were also used in Glovinskaja's research, it is entirely due to chance.

The rest of this thesis will be organized as follows. In Chapter 2 we will give definitions of important concepts and explain in detail the methodology we followed in building our questionnaire, and then we will try to determine to

[2] Holden (1976: 133).

what degree our results can be considered valid, using external judgments on palatalization for a sample of our recordings. The results of our interviews and subsequent decisions as to which consonants in which position in relation to word stress tend to be more or less palatalized are then given in Chapter 3. Finally, a brief summary can be found in the Conclusion.

2- Definitions and Methodology

A - Definitions

1. Palatalizable Consonant (PC). Not all Russian consonants can be palatalized before front vowels (**и**, /i/ or **е**, /e/). Some consonants are already palatal (**ч, щ, й**), while others remain "hard" (unpalatalized) in all cases: **ш, ж**,[3] **ц**. Every other Russian consonant is "palatalizable" and will normally be palatalized before a front vowel; before a non-front vowel or at the end of a word it will be palatalized or it will not: the spelling of the word will reflect this fact.[4] So, for example, the word **пáт** 'stalemate' will be pronounced [pát] (where **п** and **т** are not palatalized), but **пя́ть** 'five' will be pronounced [p'ǽt'], with both **п** and **т** palatalized. There are 15 PC's in Russian: **т, д, с, з, п, б, ф, в, р, л, м, н, к, г, х**.[5]

2. Loanword pronunciation. To illustrate our discussion of loanword pronunciation, let us look at two Russian words, both of which can be safely said to belong to the active vocabulary of any Russian-speaking city-dweller: **оте́ль** 'hotel' and **оте́ц** 'father'. Upon first examination, anyone would be quick to point out that both words contain a **т** in what seems to be one and the same environment: between an initial **о** in immediate pre-stressed position and an **е**

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[3] In some rare instances, and only for a minority of speakers, **ж** can be palatalized when it is long, or in the word **жюри́** 'jury', but we will not consider these possibilities, as they do not apply to loanwords before an **е**.

[4] At the end of a word palatalization is orthographically represented by the presence of the "soft sign" (**ь**). Before a non-front vowel, it is the representation of the vowel itself that indicates whether the consonant preceding it is palatalized or not. Thus for the phoneme /u/ the spelling **у** tells us that the preceding consonant is hard, whereas the spelling **ю** indicates palatalization of the preceding consonant. Similarly the spellings **а/я** and **о/ё** for the phonemes /a/ and /o/ show us the absence/presence of palatalization of the consonant preceding them. The vowel **ы** can only be found after a hard consonant.

[5] How palatalization is realized will vary from consonant to consonant, according to place and manner of articulation.

under primary stress. Yet, those **т**'s will be pronounced differently by all but the rarest speakers: [ʌtél'] and [ʌt'éc] are the respective usual pronunciations of those words, with only the **т** in **отéц** showing the expected palatalization. ("Expected" in the sense that textbooks[6] on phonetics typically state as a rule that "palatalizable" consonants are palatalized before **е**.) By contrast, the **т** in **отéль** remains unpalatalized. There is only a minority of such words in Russian where one can find a normally palatalizable consonant that remains "hard" before an **е**. All of them are borrowings, mostly recent ones, from foreign languages. Similarly, the absence of reduction of unstressed **о** and **е** is a noticeable[7] feature of some loanwords. It is the sum of all these phonetic characteristics only found in loanwords that we will refer to as loanword pronunciation features. This <u>does not</u> mean however that every loanword can be used as an example of loanword pronunciation. For example, the word **одеколóн** 'cologne' is normally pronounced [ʌd'ɪkʌlón], with regular palatalization of the **д** and reduction of unstressed **о**'s and **е**.

3. <u>Loanword.</u> As we can see, loanwords showing loanword pronunciation characteristics clearly form a subset of all loanwords, since many loanwords are perfectly assimilated (and phonetically indistinguishable from non-loanwords, called native words). A definition such as the following, "a word adopted from a foreign language and freely used"[8], is a lexicographer's definition. It is not of much use to a phonetician or a phonologist, given that, as seen before, many loanwords phonetically behave the same way as native words. Indeed, from a phonetician's point of view, it is loanwords with characteristics of loanword

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[6] For example, Hamilton (1980: 51).

[7] Though Panov (1990: 52) says it is always an optional feature. Another optional feature of some loanwords is the presence of "non-Russian" vowels or consonants: [ä], [ë], [œ] [ü], [h], and unvelarized [l].

[8] From Webster (1988: 580)

pronunciation which are interesting, not loanwords *per se*. And in our case, we will concentrate our attention only on a subset of all words with loanword pronunciation features, namely, those with the loanword pronunciation feature of absence of palatalization before an **е**. For our purposes, then, we will hereon refer to loanwords characterized by the absence of palatalization[9] before an **е** as simply loanwords. Thus defined, a complete survey of loanwords can be easily achieved:[10] all one needs is to find all the words whose phonetic descriptions (in a dictionary that gives phonetic description of entries) display (or can optionally display) an absence of palatalization before an **е**. We used two dictionaries to determine which words were to be considered loanwords. Avanesov (1983) has been our primary source, since it lists over 500000 entries with phonetic descriptions. Although it does not include phonetic descriptions for every entry,[11] Stephen Marder's dictionary (1992) has also been consulted because it contains some very recent borrowings that could not have been included in **ОСРЯ**. Please note that because of the restricted use we will from now on make of the term "loanword", we will consistently use the loosely defined term "borrowing" when we will want to talk about all borrowings, i.e. those that show loanword pronunciation as well as those that do not. Thus, loanwords as defined here form a subset within the larger set of borrowings.

4. Assimilation. There are many hypotheses put forward to describe in a more or less unified way the phonological behaviour of borrowings in Russian. The one that lies at the core of our research is that which was described among

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[9] For short, loanwords with a [-pal] consonant before **е**.

[10] This is far from the case when dealing with loanwords in the broader, more normal sense, as there can arise arguments as to the ancestry of some words, some being borrowed back and forth between two languages. One can take for example the French word "challenge" 'challenge', borrowed from the English in the last century, which itself was borrowed from French in the Middle Ages. Is the French "challenge" a loanword?

[11] According to Marder (1992: vi) this book only includes phonetic descriptions in the "less obvious cases of divergence between the spelling of a particular word and its pronunciation."

others by Holden (1976), namely that different borrowings show different degrees of assimilation,[12] i.e. ordinary phonetic rules that apply to native vocabulary will also apply with various degrees to different borrowings: Those borrowings where native phonetic rules are applied perfectly are said to have been perfectly assimilated. For example, let us consider two words which we discussed earlier: **одеколо́н** and **оте́ль**. As we have seen, according to the prescriptions of **ОСРЯ**,[13] **одеколо́н** should be pronounced [ʌd'ɪkʌlón] and **оте́ль**, [ʌtɛ́l']. The former is pronounced according to native phonetic rules, but not the latter, as the **т** is not palatalized before **е**. The degree to which these words are assimilated is thus different: **одеколо́н** is perfectly assimilated, whereas **оте́ль** is not. And if we take the word **федера́ция** 'federation' we find that it should be pronounced [f'ɪd'ɪrácʲjə] (with palatalization of the **д**), but [f'ɪdɛrácʲjə] is also permitted, where the **д** is not palatalized. The degree of assimilation of **федера́ция** is greater than that of **оте́ль**, but less than that of **одеколо́н**, since palatalization of the **д** is possible, but not obligatory. Furthermore, as Holden (1976: 132) points out, the fact that some segments do not always assimilate as fast as others within the same word leads us to posit the existence of different rates of assimilation for different segments. This means that if in a borrowing a PC is palatalized before an **е**, this PC is said to be assimilated, while there is no assimilation in the opposite case.[14] We can use **федера́ция** as an example. In this word, there are two PC's before an **е**: **ф** and **д**. But their rates of assimilation have to be different, as the **ф** is always palatalized in this word while the **д** is only optionally palatalized. As many different speakers will make many

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[12] The degree of assimilation of a borrowing is a function of its frequency and of the time that has elapsed since the word was accepted into Russian.

[13] These prescriptions might not be adhered to by some Russian speakers.

[14] A partial assimilation is also conceivable: a PC could be pronounced by a speaker in such a way that we would judge it to be partially palatalized. We do not explore this possibility in this thesis.

different choices as regards palatalization, we can expect various rates of assimilation for different PC's in different words; since our speakers pronounced each word only once, these rates are calculated by dividing the number of speakers who palatalize a given PC in a given word by the total number of speakers.

5. Measurability and comparability. One can deal with absolute or relative degrees and rates of assimilation. A degree or rate of assimilation is absolute when it can be given a value on a numeric scale; it is relative when we can only say it is greater or lesser than (or equal to) another degree or rate. We can see at once that it is practically impossible to assign absolute degrees of assimilation to borrowings. We could conceivably devise a scale from 0 to 1, where 0 would be assigned to a loanword when Russian (native) phonetic rules absolutely do not apply to it[15] and 1 would be assigned to a borrowing phonetically indistinguishable from a native word (thus it would not be a loanword according to our definition). But how do we assign a value to borrowings in reality? Who would judge to what degree Russian phonetic rules apply to individual words? Should we rely on dictionaries (prescriptive or descriptive?) or on surveys? Not even assigning relative degrees of assimilation to loanwords is feasible. Is **детекти́в** 'detective' phonetically assimilated to a greater or lesser degree than **реле́** 'relay'? Two PC's of the former (**т** and **д**) remain hard before **е**, only one of the latter (**р**). Then again, there are only four segments in **реле́** [rɛl'é], and eight in **детекти́в** [dɛtɛkt'íf], which means that in both words Russian phonetic rules apply to 75% of the segments. Is this to mean that **детекти́вы** 'detectives' is better assimilated than **детекти́в**? Clearly, to measure degrees of assimilation in absolute terms is not practical.

[15] It would then be more appropriate to talk about barbarisms or exotic terminology. For more on these terms, see Gimpelevič (1982).

To determine absolute rates of assimilation of PC's would be just as difficult. This is because the rate of assimilation of a segment is obviously a factor of the degree of assimilation of the borrowing within which it is found. Since the latter cannot be measured accurately, neither can the former. But to compare assimilation rates of two PC's found in two words assimilated to vastly different degrees would not amount to anything meaningful anyway. This is why we can only meaningfully compare the rates of assimilation of PC's that are found within one and the same word: only relative rates of assimilation can be used. Only then can we ignore the influence of time and of frequency of usage (i.e. the degree of assimilation of the word the segments are in). Therefore, to make sure our comparison of assimilation rates is valid, we have to make sure we choose words containing two or more comparable segments, which means for us two or more PC's before an **e**. This we call our "internal comparability" criterion.

6. Target-word. To test for actual palatalization (or absence thereof) of different consonants in different environments relative to word stress, we proceeded to examine our sources and find every possible word for every conceivable combination of consonant and position in a word, and then to choose among them target-words to be included in sentences to be read by Russian informants for our research. It was deemed appropriate to include 30 or so target-words in as many sentences to validate the research: in the end, 34 informants uttered each of these words, giving us a base of more than a thousand word-utterances.

B - Determination of target-words

1. Inventory of possible target-words. We proceeded to compile an inventory of all loanwords (as defined on page 7 above) based on our control

dictionaries. From among this (still quite large) list we then considered as possible target-words only those that have at least two syllables with an **е** following a PC in order to meet our internal comparability criterion. To repeat, our inventory is not that of all loanwords which **ОСРЯ** and Marder (1992) list as having two [-pal] consonants before an **е**; that list would be too short for our purposes. Rather, our inventory is that of all loanwords with two or more syllables containing an **е** after a PC, which means, by virtue of our use of the term "loanword", that at least one of those syllables is said in **ОСРЯ** or Marder (1992) to contain a consonant marked as [-pal]. (This feature might be only optional.) This inventory, sorted by alphabetical order, contains more than 200 words. (See List 1 in the Appendix.)

2. Classification according to consonants and relative position. Depending on their position in relation to the primary stress of a word, **е**'s can be more or less reduced. Just how many different degrees of reduction, and therefore how many differently reduced **е**'s, exist in Russian is a question that has been addressed by many authors. While all of them agree that the existence of a phonetic difference between an **е** in the fifth unstressed syllable before the stress and one in the fourth unstressed syllable before the stress is doubtful, a definitive scale of degrees of stress has never been devised.[16] Although Thelin (1971: 30-31) sees only three degrees of stress, most authors distinguish four or five.[17] It seems unreasonable to posit a larger number of degrees of stress, as even the proponents of a five-point scale grant that it is probably too precise for the language that is actually spoken.[18] To be on the safe side of precision we will

[16] Derwing and Priestly (1980: 213, n. 79) mention that an absolute scale of degrees of stress is theoretically possible. But one should not put too much hope in this: such a scale might differ from speaker to speaker or from listener to listener.

[17] Jones and Ward (1969: 207) and Halle (1971: 74-75) see five degrees of stress, while Derwing and Priestly (1980: 89) use only four.

[18] Halle (1971: 74-75) says that five degrees "is probably more than are usually met in actual

consider the following five degrees of reduction for **e**: (1) no reduction at all (in a stressed syllable); (2) one-quarter reduction (in a syllable under secondary stress); (3) half reduction (in immediate pretonic position, or in absolute first position in a word, but this second possibility precludes palatalization of a preceding consonant and can thus be ignored here); (4) three-quarter reduction (in other pretonic syllables); and (5) full reduction (in post-tonic syllables). Not all these five degrees are useful to us. We can first of all dismiss the second possibility. Why? Because loanwords containing this type of **e** are necessarily compound words with two roots. Two possibilities arise: either there are two PC's followed by an **e** within one root, or there are not, which means that the two PC's to compare are in different roots. If the latter is the case, we should not compare them, as the two roots might vary in their assimilation rates; but if the two PC's are in the same root, it would be much simpler to consider a word containing only that root. For example, why consider **рàдиорелé** 'radio-relay' when we can have **релé** 'relay'? Secondly, because **e**'s in post-tonic syllables are reduced and shortened to such a degree, identifying the presence or absence of palatalization of the consonants before them can be difficult: For this reason, and also to keep our data more coherent, we have chosen not to consider post-tonic syllables (possibility (5)) in the elaboration of our questionnaire. Therefore in the present analysis we will use a three-degree scale for **e** corresponding to the following three types of syllables: fully stressed; in immediate pretonic syllables; in other types of pretonic syllables.

Before we go any further, let us remind the reader that our goal is to compare rates of assimilation of PC's for palatalization. We will do simple binary combinations, comparing PC's two by two. If a loanword happens to have three

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speech", while Jones and Ward (1969: 207) agree that "it is usually sufficient to distinguish two degrees of stress."

PC's before an **е**, say X, Y and Z, we will simply compare X with Y, X with Z and Y with Z. Therefore we could, instead of loanwords, speak of PC-pairs. We are now left with a possibility of 900 PC-pairs, as we can compare (a) a PC before a stressed **е** with a PC before an **е** in immediate pretonic position (as in **пенсне́** 'pince-nez'); (b) a PC before a stressed **е** with a PC before an **е** in non-first pretonic syllable (as in **резюме́** 'summary'); (c) a PC in the first pretonic syllable with a PC in some other pretonic syllable (as in **анестези́я** 'anesthesia'); and finally (d) two PC's in non-first pretonic syllables (as in **федерали́ст** 'federalist'). Immediately we will do away with "configuration"[19] (d), because the comparison will be more meaningful between syllables of different stress values, and also because available words offering the chance to compare PC's before three-quarter-reduced **е**'s are so few[20] that they do not warrant inclusion in our research. In each of the three configurations of PC-pairs left, each element of the pair can be any one of our 15 PC's, which means we could theoretically have as many as 675 different PC-pairs (three types of pairs times 15 PC's for the first element times 15 for the second). But a look at Table 1 shows us that only 111 of those pairs are actually realized in Russian.

3. Simplification of the set of consonants. Upon preliminary examination of Table 1 one can notice that not all consonant types are equally represented in our list. For example, it is obvious that words containing possibly palatalized dentals before **е** are much more frequent than words containing possibly palatalized velars. In fact, among the 111 different PC-pairs that we can test we find that: 76 contain one or more palatalizable dentals (68.5% of all PC-pairs for which we have an example in Russian include a dental); 62 contain one or more resonants

[19] Each of the four possibilities listed here (from (a) to (d)) is a possible configuration for any PC-pair, i. e. a different subcategorisation according to the position of each PC in the pair in relation to the word stress.

[20] We counted only 36 of them.

(55.9%); 41 contain one or more labials (36.9%); and only 13 contain a velar (none contain two), for a total of 11.7% of all PC combinations. At this point, it is clear that any solid conclusion as to the assimilation of velars (as regards their palatalization) will be impossible to reach, as there are not sufficient data. If we exclude velars from our set of PC's, we can eliminate sections C, F, H and J of Table 1. At this point, we get 98 PC pairs for which a Russian word is available — 71 of which contain a dental (72.4% of total), 55 a resonant (56.1%), and 40 a labial (40.8%).[21]

4. Postulate of the independence of palatalization and voicing. Hamilton (1980: 27) writes that Russian [t] and [d] (and he seems to imply it for all "paired"[22] consonants) differ only on one detail, the former being unvoiced and the latter voiced, so that when one whispers them they sound totally identical. This might be an over-simplification, but it prompts us to introduce the following postulate:

Postulate 1: Voicing has no influence on the decision of a speaker to palatalize or not a palatalizable consonant before an **е** in a loanword.

Added Motivation: Panov (1990: 33-42 and 46), in his phonetic and phonological overview of contemporary literary Russian, finds 13 environments which can influence palatalization: not once is voicing mentioned. Neither does he mention palatalization when looking for factors which can influence voicing. Similarly, voicing is never mentioned in the list of factors influencing palatalization in Derwing and Priestly (1980: 28-129), and vice versa. This and similar evidence lead us to believe that there does not

[21] In this section, and hereafter, "dental" and "labial" refer only to stops and fricatives; we use "resonants" to refer to **р**, **л**, **н** and **м**, ignoring their place of articulation.
[22] Consonants which have voiced and unvoiced counterparts.

appear to be any reason to think that voicing is a significant factor when considering palatalization.

What are the effects of Postulate 1? First of all, by accepting it, we can treat pairs of voiced/unvoiced consonants as a single unit, and study the rate of assimilation of pairs like **т/д** instead of considering **т** and **д** separately. This means that for every PC-pair we can examine a set of eight consonants (four pairs,[23] plus the four resonants) for each element, giving us in theory a total of 192 different PC-pairs.[24] Secondly, as a corollary, we should find for each PC-pair a larger set of actual examples from our source dictionaries. Though this is only of secondary importance, still the prospect of having the luxury of choosing more meaningful words (words of a more common usage) to include in our survey should not be ignored.

5. Additional considerations to ensure comparability of PC's. Though it is necessary to meet out internal comparability criteria, since it is the only means we have to ensure that the two PC's being compared have had the same time to be assimilated, we also need some measure of external comparison. To illustrate, let us suppose for a moment that we have chosen to include the word **лексе́ма** 'lexeme' (PC-pair (**л, с/з**), configuration[25] (a)) in our survey, and let us further suppose that results from interviews with informants show us that in this word, the **л** is palatalized by more speakers than the **с** is (therefore the rate of assimilation to palatalization of **л** in this configuration is greater than that of **с**). To validate such a result, we would need to test the same PC-pair[26] in at least one other word, preferably in a different configuration. Otherwise, we have no

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[23] Namely **т/д, с/з, п/б** and **ф/в**.
[24] But a look at Table 2 shows us that only 72 of those pairs are found in Russian vocabulary.
[25] Sometimes, somewhat loosely, we will talk about configuration (**лĕ, с/зе́**) instead of the more precise use of PC-pair (**л, с/з**), configuration (a).
[26] Or the pair (**с/з, л**).

way of drawing any conclusion as to the relative rates of assimilation of these consonants in general, but only in this configuration, i.e. we can only say that **л** in a stressed syllable assimilates faster than **с** in a syllable immediately before the stress. And we could argue that one loanword can only allow us to deduce relative rates for this one word. To be able to produce results that do entirely depend on a single configuration or loanword, we need to include for each PC-pair being tested at least two words, each containing the same pair,[27] and preferably in different configurations. Therefore we should not include **лексе́ма** in our survey, since it is the only word exemplifying the pair (**л**, **с**/**з**). Table 3 is a modified version of Table 2, from which all PC-pairs found in only one configuration have been omitted. It is from this list of 128 words that we should choose which loanwords to include in our questionnaire.

6. Other variables to consider. We still have a few points to address before we can proceed with the interviews. In this section we will introduce the variables we still need to consider, those which will influence our results and those which we had to deal with in preparing our questionnaire and in recording our informants' utterances.

i) Regarding the degree of assimilation of loanwords. The astute reader will have no doubt noticed that we are trapped in something of a vicious circle. Careful preparation and precise methodology were needed to minimize the effects of a loanword's particular history, i.e. to ensure results that measure rates of assimilation of PC's as accurately as possible without too much interference from the degree of assimilation of the words where those PC's are found. To do this we decided to compare PC's only within the same words. At the same time scientific method (the need to be able to make hypotheses and to test them)

[27] The same unordered pair would be more precise: (**л**, **с**) and (**с**, **л**) are really only one pair.

forces us to include different loanwords with the same PC-pair. The question arises: to what degree can we be certain that these words are comparable? Or how can we choose them so that they are? Since we have no precise way of measuring the degree of assimilation of individual words, we have to try to control different variables instead. We should probably dismiss words that were obviously borrowed very recently (in the last fifteen years) when the majority of the words in Table 3 were in use at the beginning of the century (the word **интерфе́йс** '(computer) interface' is an example of a very recent borrowing). And we can try to choose words that belong to the same style of speech. But in the end we have to be aware of the fact that findings about a given PC-pair may only be generalized with caution. The individual histories of loanwords can not be ignored.

ii) Obvious or transparent prefixes. We should also be aware of the fact that prefixes can influence our results. Let us return to the case of **интерфе́йс**. Do the **т** and **ф** of **интерфе́йс** really belong to the same word? Is our internal comparability criterion met? After all, words like **интерме́ццо** 'intermezzo' and **интерпрета́ция** 'interpretation' were attested in the nineteenth century, so the prefix **интер-** has had a longer life than the whole word **интерфе́йс**.[28] When a Russian speaker is faced with the decision to palatalize the **т** in this word, is it not right to suppose that how he or she pronounces **интерме́ццо** or **интерпрета́ция** might exert an influence? But not all prefixes may be felt so strongly by speakers. Is the **де-** in **детекти́в** 'detective' the same as the one in **дефибре́р** 'fibre separator'? Historically it is, but not every speaker might feel

[28] Though usually we can only say for certain that a word was either coined or borrowed before a certain date (using the oldest known reference to the word), in the case of **интерфе́йс** we have a pretty good idea that it was borrowed after 1980, when computer jargon started to become widespread.

that in the former case there is a demarcation between prefix and suffix.[29] Because of the uncertainty surrounding the internal comparability criterion when one PC belongs to a prefix and the other to the root of a loanword (but aren't most loanwords borrowed as a whole, prefix and all?), it is better to include as few words with obvious prefixes as possible.[30] But it will probably be of interest to include a few, in order to see if such words indeed do behave differently from others. In the mean time, a complete list of those words in our data which have prefixes follows, plus a few words with suffixes.

With **интер-**	**Интерпелли́ровать, интерпелля́ция, интерве́нт, интерве́нция, интервени́ровать, интерфе́йс, интерфере́нция, интерферо́н, интерпрета́тор, интерпрета́ция, интерпрети́ровать, интерме́дия, интермеди́йный, интерме́ццо,**
with **дез-**	**Дезинсе́ктор, дезинсе́кция,**
with **де-** (this prefix is not always transparent)	**Дете́ктор, детекти́в, декаде́нт, декольте́, дебето́вый, дебету́ю, дефензи́ва, депре́ссия, депресси́вный, дефибре́р, дефиле́,**
with **ре-** (not always obvious)	**Ренесса́нс, регре́сс, регресси́вный, репре́ссия, репресси́вный, репресси́ровать, репресса́лии, реле́, реле́йный, резюме́, реноме́,**
with other prefixes	**Децибе́л, дециме́тр, декаме́тр, склеродерма,**
with suffixes	**Бизнесме́н, конгрессме́н.**

iii) Construction of sentences. To make sure that our target-words were pronounced as naturally as possible (though one can argue that it is difficult to pronounce words such as **гермене́втика** 'hermeneutics' naturally if one has

[29] How many English or French speakers know that "to detect" originally meant "to uncover (from under a roof)"?

[30] We are of course not talking about such prefixes as **про-** or **за-**, which do not contain the vowel **е**, and with which we are therefore not concerned.

never heard the word before), we decided to build sentences around our loanwords so as to "hide" them in some way and render them more inconspicuous.

Keeping in mind all these factors, we then proceeded to choose approximately 30 words. The final choice was strictly the author's, and it might be argued that certain words should not have been included or that certain others ought to have been. In any event, on the next page is the list of words that we used to study assimilation rates of PC's, with their English translation:

резюме́	summary
сюзере́н	suzerain
грейдера́	dirt roads
кибернети́ческий	cybernetic
гермене́втика	hermeneutics
интерпрета́ция	interpretation
сенте́нция	maxim
лотере́я	lottery
интерфере́нция	interference
несессе́р	dressing-case
секрете́р	writing desk
репресси́вный	repressive
менестре́ль	minstrel
федера́ция	federation
метре́сса	mistress
сеттера́	setters (dogs)
декаде́нт	decadent
тенде́нция	tendency
абсентеи́зм	absenteeism
интерве́нт	interventionist
киберне́тика	cybernetics
крейсера́	cruisers (ships)
штемпеля́	stamps
репре́ссия	repression
медресе́	madrasah (a mosque school)
бельведе́р	belvedere
терапе́вт	therapeutist
декольте́	low neck (of a dress)
детекти́в	detective

C - Validation of the judgments

When we were listening to the recordings of our Russian informants, it quickly became evident that in many cases it was very difficult to judge if PC's were palatalized or not. Part of the reason lies in the quality of the material used for the recordings: an ordinary $60 portable "cassette-corder" from Sony which produced a fair amount of noise. But mostly the difficulty is intrinsic: some consonants are inherently harder to judge with regard to palatalization (examples of this are the rolled **р** and labial stops **п** and **б**), and it is noticeably more difficult to detect palatalization in unstressed syllables than it is in stressed ones, due to the reduction of the vowel and to the fact that unstressed syllables are often shorter than stressed ones. When it became manifest that the exactitude of our palatalization judgments could not be guaranteed, even after our best efforts, it was deemed necessary to try to determine what degree of reliability and precision to expect from them. If the palatalization of some PC's is so difficult to accurately determine that we end up with false results, it makes little sense to try and deduce anything from these invalid results. The idea of using a computer for the purpose of validating our palatalization judgments was quickly abandoned, as the wave representations of PC's available to us did not prove informative. In those cases where help was needed to ascertain whether a PC was palatalized or not (**б** in much reduced syllables, for example), the wave patterns proved unclear: only the audibly clear instances (such as dentals in stressed syllables) gave clear visual representations with a discernible difference between the wave patterns of palatalized and non-palatalized PC's. Instrumentation was, therefore, only informative where further information was not required.

Therefore, in order to determine what degree of precision to expect from our data, it was decided to submit a sample of the recordings to a panel of native Russian speakers. Six recordings were randomly selected and submitted to three Russian graduate students, two of whom work in linguistics, and the other in the field of literature. These students were told to mark consonants before **e** in selected words as being palatalized or unpalatalized, and were allowed to use a question mark (?) when they could not decide. We then proceeded to compare the results obtained by the panel with our judgments regarding these six random recordings.[31]

As was to be expected, not every PC was judged in the same way by all members of our panel. In fact, unanimity within this panel was achieved for only 74% of the consonants. This seems to indicate that palatalization is to some degree subjective: Native Russian speakers do not always agree on palatalization in words uttered by other native Russian speakers. Admittedly, some cases where members of our panel disagreed amongst themselves might be explained by the imperfect quality of the recordings, but it is our firm belief that this explanation can not account for all discrepancies. After all, the quality of the recordings was not poor: it was simply not perfect. Our hypothesis is that palatalization, like all features of human speech, is primarily a question of perception. The human ear is not a flawless sound decoding instrument, nor is the human mouth a flawless sound producing instrument. Perfect speakers do not exist, for Russian or for any other language.

Nevertheless, for the purpose of determining the validity of our judgments regarding palatalization, we needed to compare these with what a "perfect" speaker would hear. In our case, this "perfect" speaker of Russian is found by

[31] The complete results can be found in Table 4, in the Appendix.

democratic methods: what the majority in our panel agrees on is the "right" choice; the other possibility is therefore "wrong".[32] Let us illustrate this. The sample used for our evaluation purposes contained 384 PC's, and in 108 instances our opinion was different from that of the majority of members of our panel. This means that for 108 out of 384 PC's we were "wrong" when trying to determine whether they were palatalized or not; in other words, we were "wrong" 28.1% of the time. Whether this is an acceptable success rate is open to debate.

Closer examination of Table 4 will reveal that for certain PC's we were consistently "wrong". For example, in the word **кибернéтики** our panel unanimously agreed that all six speakers in the sample palatalized the consonant **б**, while we thought that all six speakers used a hard **б**. Similarly, we were wrong in every case when trying to determine if the **м** in **медресé** and in **метрéссы** was palatalized or not. On the other hand, we were always right when deciding whether the dental stops in **детектúвы** and **декольтé** were palatalized or not. Clearly, the validity of our evaluation varies dramatically, depending on which PC is involved. Proof of this can be found in the following table, showing our success rate for every PC in every word position.

[32] Let us be perfectly clear: We can never know for certain who is "right" and who is "wrong" when some listeners perceive a consonant as palatalized while others believe it is unpalatalized. At a philosophical level, one could say that everyone is right, as what one perceives is the reality for this person. But linguistics tries to be objective: a consonant can not be palatalized and unpalatalized at the same time. In the absence of a perfect listener who could decide who is right, the most practical thing to do is to agree that what the majority perceives is "right", and therefore that the minority is "wrong".

Success rates in relation to PC type and word position

Type of PC	2nd pre-stressed	1st pre-stressed	Stressed
т/д	90.5%	93.75%	100%
с/з	38.9%	41.7%	83.3%
п/б	25%	8.3%	83.3%
ф/в	83.3%	66.7%	100%
р	66.7%	76.7%	88.9%
м	16.7%	16.7%	83.3%
н	66.7%	50%	100%

As can be seen above, our success rate for pre-stressed **с/з**, **п/б** and **м** is probably too low to be considered acceptable. To draw any statistically valid conclusion based on our recordings, we must not consider PC-pairs that include any of these low success-rate PC's. This means that we were not able to use the following words: **сюзере́нов**, **кибернети́ческой**, **гермене́втики**, **сенте́нциями**, **метре́ссы**, **сеттера́**, **абсентеи́зму**, **киберне́тики**, **крейсера́** and **штемпеля́**. Also, the following words were used for only one PC-pair (underlined): **несессе́р**, **секрете́р**, **менестре́лей**, **медресе́** and **бельведе́ром**. To include every word and PC-pair would be counterproductive, as we were incapable of determining with any degree of certainty if **п**, **б**, **с**, **з** or **м** were palatalized or not before **е** in any pre-stressed syllable. Only if we exclusively use the PC-pairs remaining after the exclusion of the above set could we be relatively certain that

our palatalization judgments were reliable. (Our success rate with these remaining words is 84.6%.)

3 - Results and Analysis

A - Presentation

In this chapter we will show which conclusions (however partial) we can draw from the data collected during our interviews. As we saw in the previous chapter, we will not be able to use every PC-pair found in our target-words; nonetheless, there are still ten for which we have every reason to believe our conclusions will be valid, from a statistical point of view,[33] as well as from the point of view of compatibility of perceptions regarding palatalization. When we will proceed to compare relative rates of assimilation of PC's, we will do this in two steps: before drawing any general conclusion as to the relative rates of two PC's we will first concentrate on their comparison in particular word positions. So for example before trying to draw any conclusion as to the rates of **р** and **т/д** we will first compare the rate of assimilation of **р** in a stressed syllable with that of **т/д** in an immediate pre-stressed syllable, then with that of **т/д** in the second pre-stressed syllable, then compare the rate of **р** in first pre-stressed position with

[33] We found 34 informants using referrals from previously interviewed informants. This means that our selection of informants was not entirely random. A random selection would have ensured relatively equal representation of both sexes with different levels of education and social status; our method of relying on informants to provide more names of Russians living in Montreal and Quebec City resulted in a situation in which many of our speakers had advanced education, with an unusually large amount of linguists or translators. This follows from the fact that, human nature being what it is, more often than not the people with whom one associates are from the same milieu, whether cultural or professional. Since our first contact person was a linguist, it was to be expected that the group of people he would refer us to would contain a high proportion of well educated Russians (even academics); the same can be said for every other contact person. This bias towards highly educated speakers does not invalidate our research: it would have presented a problem if we had been interested in some socio-linguistic aspect (for example, if we had wanted to know if education influences a speaker's choice to palatalize certain consonants or not). For our purposes, this sort of "inbreeding" in our group of informants poses no problem: we only have to specify that our conclusions apply to Russians with relatively advanced education and might not apply to lesser-educated ones. Similarly, they might not apply to unilingual speakers as our speakers all live in Quebec and by necessity speak a second (or third) language.

that of **т/д** in a stressed syllable, etc., including as many comparisons as our data allow us.

Before proceeding, let us adopt the following notations. From now on, we will use capital Roman letters to mean "the (relative) rate of assimilation" of the equivalent consonant(s) in the Cyrillic alphabet. When talking about the rate of assimilation of a set of voiceless/voiced consonants, we will use the capital letter corresponding to the voiceless consonant. Thus;

F	means the relative rate of assimilation of		**ф/в**
M	"	"	**м**
N	"	"	**н**
P	"	"	**п/б**
R	"	"	**р**
S	"	"	**с/з**
T	"	"	**т/д**

Because we compared rates of assimilation, we made use of the mathematical symbols ≈, "approximately equal to", >, "greater than", and ≥, "greater than or equal to", in summarizing our results. For example to say that the rate of assimilation of **р** is greater than that of **т/д** we simply wrote: R > T. We also used the following conventions: **é** for a stressed **е**, **ê** for an **е** in the first pre-stressed syllable and **ĕ** for an **е** in the second syllable before the stress. In this way, we were able to condense the unwieldy phrase "the rate of assimilation of **с/з** before a stressed **е** is greater than the rate of **р** before an **е** in the second syllable before the stress" by the following inequation: Sé > Rĕ. Finally, we used Roman capital letters instead of small cyrillic ones when talking about PC-pairs, for example using (F, T) instead of the more cumbersome (**ф/в**, **т/д**).

B - Results

Let us now consider the pair (F, R), which will serve as an illustration of the procedure followed for other PC-pairs. This pair was found in only one of the words we chose, **интерфере́нции**. When pronouncing this word, 24 of our informants used a soft **ф**, while ten used a hard **ф**. A convenient way to say this is to write that Fê = (24, 10), where the first number in parentheses is the amount of speakers palatalizing the consonant, and where the second number is the amount of speakers not palatalizing it. The results are almost identical for the **р**: 23 cases of soft **р**, and ten of hard **р**, or Ré = (23, 10). (Another informant, nº 10, could not roll her **р**'s properly, pronouncing this consonant approximately like a [w] and we were not able to determine when and if she palatalized it.) As each member of the PC-pair being considered here was palatalized by roughly the same proportion of speakers,[34] we can hypothesize that the rates of assimilation of the PC's considered here are approximately equal, which can be summed by approximation: Fê ≈ Ré. (We might also say that Fê ≥ Ré, if this small difference held for much larger samples of informants.) Trivially in this case we can also hypothesize that F ≈ R, though here we should obviously test this hypothesis against data using other word positions. To summarize, our data lead us to the following conclusion:

1 - Fê ≈ Ré

I - F ≈ R

[34] In percentage points, the difference is not even 1%: 70.6% of our informants palatalize **ф/в**, and 69.7% do so with **р**. In the absence of any statistical test, we arbitrarily drew the line this way: if two rates differ by between 0 and 5% we will say they are approximately equal (Rate1 ≈ Rate2), if they differ by more than 10% we will say that one is greater than the other (Rate1 > Rate2), and if the difference between the two is from 5 to 10% we will use Rate1 ≥ Rate2, indicating by this that we see a difference, but that we do not know whether this difference is significant or not.

(We will number our word-position-dependent hypotheses with Arabic numerals, and our word-position-independent hypotheses with Roman numerals.)

For (F, T) we used for words: **бельведе́ром**, **интерве́нтам**, **интерфере́нции** and **федера́ции**. We found the following results:

in **бельведе́ром**, Fê = (1, 33), Té = (0, 34);

in **интерве́нтам**, Fé = (31, 3), Tê = (0, 34);

in **интерфере́нции**, Fê = (24, 10), Tĕ = (0, 34);

in **федера́ции**, Fĕ = (28, 6), Tê = (16, 18).

Our hypotheses are:

2 - Fê ≈ Té

3 - Fé > Tê

4 - Fê > Tĕ

5 - Fĕ > Tê

II - F > T

Results and hypotheses for other PC-pairs follow.

(M, R): **резюме́**, Mé = (3, 31), Rĕ = (23, 10).

6 - Rĕ > Mé

III - R > M

(N, R): **менестре́лей**, Nê = (21, 13), Ré = (18, 15).

7 - Nê ≥ Ré[35]

IV - N ≥ R

(N, S): **несессе́р**, Nĕ = (1, 33), Sé = (1, 33).

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[35] In percentage terms, **н** is palatalized by 61.8% of our informants, and **р** by 54.5%.

8 - Nĕ ≈ Sé

V - N ≈ S

(P, T): **терапе́вт**, Tĕ = (10, 24), Pé = (28, 6).

9 - Pé > Tĕ

VI - P > T

(R, R): **репресси́вных**, Rĕ = (24, 9), Rê = (23, 10);

and **репре́ссии**, Rê = (27, 6), Ré = (19, 14).

10 - Rĕ ≈ Rê

11 - Rê > Ré

(R, S): **медресе́**, Rê = (0, 33), Sé = (17, 17).

12 - Sé > Rê

VII - S > R

(R, T): **грейдера́**, Rĕ = (3, 30), Tê = (2, 32);

интерпрета́ции, Rê = (22, 11), Tĕ = (0, 34);

интерфере́нции, Ré = (23, 10), Tĕ = (0, 34);

лотере́и, Ré = (31, 2), Tê = (4, 30);

and **секрете́ру**, Rê = (19, 14), Té = (0, 34).

13 - Rĕ ≈ Tê

14 - Rê > Tĕ

15 - Ré > Tĕ

16 - Ré > Tê

17 - Rê > Té

VIII - R > T

(T, T), **декаде́нтов**, Tĕ = (12, 22), Té = (14, 20);

декольте́, Tě = (5, 29), Té = (0 , 34);

детекти́вы, Tě = (4, 30), Tê = (5, 29);

and **тенде́нция**, Tê = (1, 33), Té = (3, 31).

18 - Tě ? Té[36]

19 - Tě ≈ Tê

20 - Tê ≈ Té

One can see that for six of our eight "general" hypotheses (those numbered I to VIII) we only have one example to work from, which greatly reduces their reliability. This is not caused by a flaw in the methodology, as our choice of loanwords was explicitly designed to avoid this situation. But the fact that part of our data was invalidated in Chapter 2 left us no choice but to eleminate it; as a consequence, the data base for a PC-pair like (P, T) was depleted by two-thirds. Instead of using three loanwords to test it, **бельведе́р**, **терапе́вт** and **штемпеля́**, we could only use **терапе́вт**, as our ability to determine if **п/б** in unstressed syllables are palatalized or not is not reliable enough to include the other two words. Therefore an obvious way to derive general hypotheses based on a larger set of observations would be to have native Russian speakers determine whether PC's are palatalized or not for our whole group of informants. We have calculated that if every target-word could be used, our questionnaire would permit us to make 39 position-specific hypotheses and 13 general ones, bringing us closer to an overall understanding of palatalization in loanwords.

[36] This is because **декаде́нтов** would lead us to suppose that Tě ≤ Té, but at the same time from **декольте́** we would think that Tě > Té, with a 5.9% difference between the rates in the former case and 14.7% in the latter. This can mean two things: either our results are contradictory, possibly because of our shortcomings in sampling or identifying palatalization, or they are an indication that palatalization in some loanwords depends on the words themselves rather than on the type and position of the consonants involved.

To test our hypotheses we will follow a two-step process. First of all we should be able to see if they are in agreement with each other. For this we will need a second postulate, one that is usual in ordered sets.

Postulate 2: Relations between rates of assimilation are transitive. In other words, if ~ stands for a relation between two rates of assimilation (>, ≥ or ≈), we postulate that if Rate1 ~ Rate2 and Rate2 ~ Rate3, then Rate1 ~ Rate3.

Discussion: This is tantamount to saying that palatalization in Russian loanwords does not simply depend on the individual histories of loanwords but rather on some intrinsic property of consonants. Please refer to Chapter 2, Definition 4 for an explanation as to why we believe this to be the case.

Because our three types of relations are associated with different levels of "statistical certainty",[37] we will consider them separately at first, before trying to show an overall picture of the consonantal system of Russian in relation to palatalization in loanwords. Let us start with all cases where the difference between rates was larger than 10%, i.e. all cases with a ">" relation. For now, we will include the inequation Tě > Té, deduced from **декольте́**, though later we will have to come back to modify it. We get seven generalized (hence the use of the letter G) inequalities or strings of inequalities. These are as follows:

G1 - Rě > Mé	6[38]
G2 - Fé > Tê	3

[37] When we use ">" between two rates of assimilation our results allow us to be fairly sure of their ordering, while the use of "≈" between rates shows that we know very little about their ordering.

[38] Numbers listed here refer to inequations listed above that were used in deriving the strings of inequalities on the left.

G3 - Fĕ > Tê	5
G4 - Fê > Tĕ >Té	4, 18
G5 - Pé > Tĕ > Té	9, 18
G6 - Sé > Rê > Ré > Tê	12, 11, 16
G7 - Sé > Rê > Ré > Tĕ > Té	12, 11, 15, 18

These inequalities indicate progressions among Russian consonants. Generally, we see that **т** and **д** in loanwords tend to remain unpalatalized more often than other consonants, while among dentals the fricative **с/з** are palatalized more often than the roll **р**, which is itself palatalized more often than the stops **т/д**. We can also see that inequations 14 and 17 are confirmed by other inequations. For example, inequation 14 states that Rê > Tĕ, and this is verified by means of inequations 11 and 15 which state, respectively, that Rê > Ré and that Ré > Tĕ. At this point we can add to inequations G1 to G7 two more inequalities where our degree of certainty was not as high, with a difference between compared rates of assimilation ranging from 5 to 10%. One of these two new inequalities is Té ≥ Tĕ, deduced from how Russians pronounce **декаде́нтов**, and as we saw earlier this is obviously irreconcilable with Tĕ > Té, which is found in the strings G4, G5 and G7. Rather than try to determine if one of the two conflicting inequalities can be dismissed, we prefer not to make any hypothesis as to the relative rates of assimilation of **т/д** in different word positions. Instead we will rewrite our inequalities, taking into account the addition of Inequation 7, in the following manner:

G8 - Rĕ > Mé	G1
G9 - Fé > Tê	G2
G10 - Fĕ > Tê	G3
G11 - Fê > Tĕ, Té	G4

G12 - Pé > Tě, Té	G5
G13 - Sé > Rê > Ré > Tě, Tê, Té	G6, G7
G14 - Nê ≥ Ré > Tě, Tê, Té	7, G6, G8

Using commas to separate assimilation rates, as in Inequations G11 to G14, means that we can not compare them. We simply know, in Inequation G11 for example, that **ф/в** before an **е** in the first pre-stressed syllable assimilate faster (are palatalized more readily in loanwords) than **т/д** in either the stressed syllable or the second syllable before the stress, although we can not determine in which of the two stress positions the dental stops assimilate faster.

Our final step will be to take into account the set of inequalities where we could not see an obvious difference between rates of assimilation, i.e. those with a "≈" sign, Inequations 1, 2, 8, 10, 13, 19 and 20. Since by saying that Rate1 ≈ Rate2 we are saying that Rate1 > Rate2 and Rate2 > Rate1 are both possible, we have to be careful that we do not attach too much importance to this set of inequalities: in particular, if one of these seven approximations seems to contradict one of Inequations G8 to G14 we will choose to regard the latter as the valid hypothesis. For example, Approximation 2 (Fê ≈ Té) is not in agreement with Inequation G11 (Fê > Tě, Té), but the contradiction is only apparent, since Fê > Té is a possibility comprised in Fê ≈ Té. We can keep Inequation G11 unmodified, discarding Approximation 2 as adding nothing new to it. Similarly, we can see that Inequations 19 and 20 add nothing to what we already know: it is impossible to conclude anything as to the rate of assimilation of **т/д** in different positions in relation to stress.

Approximation 1 tells us that there is no significant difference between Fê and Ré. We can include this information into our series of hypotheses and merge Inequation G11 with G13 and G14 as follows:

G15 - Sé > Rê > Fê, Ré > Tě, Tê, Té

G16 - Nê ≥ Fê, Ré > Tě, Tê, Té

Also, we can use Approximation 8 (Ně ≈ Sé) to further refine Inequation G15:

G17 - Ně, Sé > Rê > Fê, Ré > Tě, Tê, Té

Finally, Approximations 10 and 13 (Rě ≈ Rê and Rě ≈ Tê, respectively) can not be reconciled with our hypotheses: in Inequation G17 we would get something like Ně, Sé > **R ě**, Rê > F ê, Ré > **R ě**, Tě, Tê, Té, with a recurrent Rě. Thus, after consideration of all partial deductions made on the basis of the loanwords with valid palatalization appraisals, we can order PC's based on the readiness of Russian speakers to palatalize them in loanwords in the following way:

A)

Rě > Mé

Fě, Fé > Tê

Pé > Tě, Té

Nê ≥ Fê, Ré > Tě, Tê, Té

Ně, Sé > Rê > Fê, Ré > Tě, Tê, Té

If transitivity is applied to the more general hypotheses that are numbered from I to VIII, we can see the following general trend:

B)

P > T

N, S > F, R > M, T

C - Analysis

Can we make some sense of these results? It would have been much easier to do so if we had been able to compare every PC with every other one. For example, we could say that fricatives are more easily palatalized than stops, since S > F > T, but this statement would be better supported if we could compare S and F with P also. Are dentals more assimilated than labials or is it the other way

around? There does not seem to be a clear answer to this. Similarly, we are unable to say if a given PC is more likely to remain hard in a stressed syllable, in the syllable immediately before the stress or in another unstressed syllable, as our results from A) show, though it seems that **р** is palatalized less often before a stressed **е** than before unstressed **е**'s. Still, it is possible to notice some trends. The most obvious one is that dental stops are consistently palatalized less often than other PC's, regardless of the position of the stress. The only exception to this assertion is **м**, but this is only because we did not directly compare **м** and **т/д**. In fact, **м** was only compared to **р**, and only in one configuration. We think that a further experiment along the lines followed here would show that **м** is palatalized more often than **т/д**, just like every other PC.

It is one thing to notice the peculiar behaviour of dental stops in loanwords, but it is much more difficult to explain why this should be so. We can only, here as elsewhere, offer hypotheses. One such hypothesis is very hard to prove or disprove. We can safely suppose that when a word is first borrowed its PC's are viewed as unpalatalized, but with time gradually become soft, each at their own pace. This is in agreement with Holden's (1976) ideas, themselves adapted from Kiparsky (1968), which are at the core of this thesis. But to explain the trends noticed above, we can further conjecture that for each PC there is a measurable (auditory and/or articulatory) gap between the hard and the soft consonants, so that the PC'S with the smallest gap are the first ones to be palatalized in loanwords. This would mean that **с** and **сь** (or rather [s] and [s']) are more similar (sound closer, are pronounced in a more similar way) than **т** and **ть** ([t] and [t']). But to actually verify that the ordering of the PC's as seen above in A) and B) corresponds to an ordering of PC's according to the difference (as measured acoustically?) between the palatalized and the unpalatalized forms of the

consonants falls well beyond the scope of this thesis. A second hint of an explanation as to why dental stops tend to remain unpalatalized can be found in a review of our loanword sources. As even a cursory look at Table 1 will show the reader, there are significantly more loanwords as we defined this term that contain a **т** or a **д** before an **е** than there are loanwords with other PC's. One might speculate that Russians are more used to hear hard dental stops in borrowings because there is simply a larger amount of words where it is possible to hear them, and that as a consequence they have come to be used to pronounce hard **т**'s or **д**'s. To verify this hypothesis, the procedure is straightforward; rather than do an experiment we could have counted in how many words each PC is allowed to remain unpalatalized as prescribed by Avanesov (1983). We did not choose this approach, as it would not necessarily give an accurate picture of reality. By nature prescriptive works do not pretend to describe reality, and furthermore the material in such works takes a long time to gather, so that the situation described in Avanesov (1983) is probably closer to what it was in the 1950's or 60's than to what it is today. Nevertheless, this type of dictionary survey is complementary to experimental work as the one presented in this thesis: Until such work is done we can only suppose that loanwords with hard **т/д** are more numerous than loanwords with other hard PC's.

Another conclusion we can make based on our ordering of PC's is that stops in general seem to behave differently from other types of consonants. When one looks at fricatives or resonants, it seems safe to say that dentals are more often palatalized than labials (N > M and S > F), but among stops dentals are less often palatalized than labials (P > T). A third remark we can make at this point concerns the roll **р**: although this consonant is in many ways unique and very different from other consonants, from acoustic and articulatory standpoints, its

rate of assimilation is in no way remarkable, but rather intermediary between other resonants or dentals: N > R > M and S > R > T. This student has no explanation for these two broad observations. It is however possible that here again precise instrumentation and measurement of consonants or survey of dictionary sources could be useful in clarifying the relative position of **p**. Better understanding of how palatalized consonants physically differ from unpalatalized ones and exact knowledge of the full corpus of loanwords can only help us to understand the phonetics and phonology of Russian loanwords. But if we can only offer tentative conclusions and hypotheses, we can at least compare our findings with results from other sources. We will use the results of our Russian panel in a first step and then those of Holden (1976) for external confirmation of our findings.

D - Russian panel's results and analysis

Since our panel was only called upon to listen to a small sample of our recordings, its findings can in no way be considered statistically significant; they can nonetheless be used to see if Russian listeners tend to hear a similar hierarchy of PC's as the one we suggested in A) and B). Caution has to be exercised in analysing data compiled by our panel's "judges", though. As only six recordings were submitted to their assessment, no comparison of assimilation rates can be considered to be based on a large enough sample, which means that we will use the relation ">" between rates only as a useful indication of general tendencies, not, as with our own data, as an indication of a significant difference (using the 10% criterion). So when we say that our panel sees Sê > Tê because for the word **сенте́нция** it found[39] that all 6 speakers palatalized the **с** while no speaker palatalized the **т** (using notation introduced earlier we write that

[39] More precisely, the majority of the members of our panel.

Sê = (6, 0) and Té = (0, 6)), we fully know that the difference is not significant because the sample on which it was based is too small.

Based on Table 4, the following inequations can be derived:

(F, P): Pĕ > Fê

(F, R): Fê ≈ Ré[40]

(F, T): Fê > Tĕ, Fĕ > Tê, Fé > Tê, Fê > Té

(M, N): Mĕ > Nê, Mê > Né

(M, R): Rĕ > Mé, Mĕ > Ré, Mê > Ré, Mĕ > Rê

(M, S): Mĕ > Sé

(N, P): Pĕ > Nê, Pê > Né

(N, R): Nê > Ré

(N, S): Nĕ > Sê, Nĕ > Sé

(P, T): Pê > Tĕ, Pĕ > Té, Pé > Tĕ

(R, R): Rê > Rĕ, Rê > Ré

(R, S): Sĕ ≈ Rê, Sê > Rĕ, Sê > Ré, Sé > Rê

(R, T): Rĕ > Tê, Rê > Tĕ, Ré > Tê, Ré > Tĕ, Rê > Té

(S, S): Sê > Sé

(S, T): Sê > Té, Sĕ > Té, Sĕ > Tê

(T, T): Tĕ > Té, Tê ≈ Té, Tĕ ≈ Tê[41]

These inequalities can be synthesized in the following way:

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[40] We will use "≈" to indicate that our Russian panel had the same results in comparing rates, here in **интерфере́нция** Fê = (4, 2) and Ré = (4, 2).

[41] This is the only internal contradiction of this set of inequalities. As happened when we were discussing our own set of inequations, we have no choice but to conclude that we can not make any conclusions as to the relative rates of assimilation of т/д in different positions in a word.

C) {

Fĕ, Fé > Tê

Pê, Pé > Tĕ, Té

Mê, Pê > Né

Mê > Fê, Ré > Tĕ, Tê, Té

Mĕ, Pĕ > Nê > Fê, Ré > Tĕ, Tê, Té

Mĕ > Sé > Rê, Sĕ > Fê, Ré > Tĕ, Tê, Té

Mĕ > Sé > Rê, Sĕ > Rĕ > Mé, Tê

Nĕ > Sê > Sé > Rê, Sĕ > Fê, Ré > Tĕ, Tê, Té

Nĕ > Sê > Sé > Rê, Sĕ > Rĕ > Mé, Tê

The reader can easily verify that every inequality that we deduced in A)[42] is verified here in C), without exception. This means that our conclusions seem to be corroborated by the findings of our Russian panel. This in itself should not be given too much importance: after all both sets A) and C) were based on the same data, and furthermore we had only retained those of our results which were in agreement with those of the panel, so that the fact that inequalities in set A) are verified by those in set C) was almost ensured from the start. On the other hand, because we based our more general deductions in B) on a reduced set of inequalities, we can not be so sure that they will be supported by general deductions based on the larger set C). To check this, let us first list a series of inequalities based on the word-position-dependent ones listed above. In the same order we get: P > F; F ≈ R; F > T; M > N; M > R;[43] M > S; P > N; N > R; N > S; P > T; S > R; R > T and S > T, which can be summed up in the following way:

D) M, P > N > S > F, R > T

[42] See page 35 above.

[43] In most configurations, but not when comparing R with Mé.

Everything we said in B) is corroborated in D), except for our conclusions relating to the rate of assimilation of the labial м. But it is easy to see why this is the case when we look at every inequality involving M. We can quickly notice that every time we compared M to another rate of assimilation, M was always the greater of the two, except when in a stressed syllable. In other words, м is always more often palatalized than other PC's we can compare it with, except when this comparison involves an м before a stressed е, where м is palatalized less often than the least palatalizable consonants (except т/д). It just happens that in our reduced set of inequalities we only looked at м in stressed syllables and derived a general impression of this PC in B) that is based solely on its behaviour in this type of syllable. This was the risk we accepted when we reduced the numbers of PC-pairs and of configurations to analyse. Besides this sole divergence of opinion, our conclusions are entirely supported by the analysis of our panel's conclusions.

E - Holden's results and analysis

As we said above, such a closeness of views between our conclusions and those based on the sample used by the Russian panel was at least in part to be expected. If analysis of Holden's (1976) conclusions can also be found to support us, this would be much more meaningful. Let us summarise what Holden had found that dealt specifically with palatalization of PC's before е. This was covered in section 2.2 of his paper (Holden (1976: 137-140)). Using the same notation which we have used so far, we can list the following inequalities which show the conclusions Holden made from data compiled by Glovinskaja (1971), in the same order used to list PC-pairs as above.[44]

[44] Since the size of the sample of speakers interviewed by Glovinskaja for this research was similar to our own, we have used the same guidelines in determining when differences between rates of assimilation were significant or not. Any comparison between rates which

(F, T): Fé > Tê

(L, R): Lé > Rê

(M, R): Mĕ > Rê

(M, S): Mĕ > Sé

(M, T): Mé > Tê, Mĕ > Té

(N, R): Nê > Rĕ

(N, S): Nĕ ≥ Sê, Nĕ ≥ Sé

(R, R): Rê > Ré

(R, S): Rê > Sé

(R, T): Rê > Té, Tê > Ré

(S, S): Sê ≈ Sé

(S, T): Sê > Té

(T, T): Tê ≥ Té,[45] Tê ≥ Tĕ, Tĕ > Té

As we did above, we can use the transitive nature of these types of relations to produce the following set of inequalities:

E) $\left\{ \begin{array}{l} Nê > Rĕ \\ Nĕ \geq Sê, Sé > Té \\ Lé, Mĕ > Rê > Ré \\ Lé, Mĕ > Rê > Sê, Sé > Té \\ Fé, Mé > Tê > Ré \\ Fé, Mé > Tê \geq Tĕ > Té \end{array} \right.$

Contrary to the group of inequalities deduced from our panel's findings, this group of inequalities does not entirely support our findings. As a matter of fact,

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yielded a diference of more than 10% was denoted with the use of the relation ">"; if the difference is smaller than 5% we use "≈", and if it is between 5 and 10% we use "≥". Holden had used ">" even for the smallest of differences, so our interpretation of his results might be different from his own in some cases.

[45] This is because results from **тенде́нция** point to Tê ≈ Tĕ while those from **дете́ктор** point to Tê > Tĕ. We combined these two inequations to derive Tê ≥ Tĕ, used in our analysis.

there are two of our deductions which are not confirmed in E), but this apparently small number of discrepancies is misleading. First of all, the reader can see that the amount of configurations tested in both this thesis and Holden's/Glovinskaja's research is very limited (only nine common configurations). For four of these nine configurations we had obtained results that were so close that we could not determine which of the two rates being compared was the greater. And then for only three of the remaining five configurations are our conclusions corroborated by Holden. Let us examine more closely those cases where there is no agreement.

The two configurations which produced different results are (Rê, Sé) and (Ré, Tê). We tested the latter with the word **лотере́и** and our results were very clear: **т** was almost never palatalized while **р** almost always was, so that Ré > Tê. Holden concluded exactly the opposite based on results obtained using the word **депре́ссия** 'depression': **д** was palatalized by half the speakers recorded by Glovinskaja while **р** was by only 25%. What could explain these conflicting observations? One could point to the obvious differences in the composition of the informants who provided the data: in our research we recorded Russian emigres living in a French and English milieu, and in Glovinskaja's research informants were Russians living in the USSR. But it is hard to imagine why bilingualism would affect palatalization in one's mother tongue, and only in specific configurations. A more credible explanation is that differences in the degrees of assimilation of the words used here might account for the different rates of assimilation of the PC's involved. For example, if **депре́ссия** has been more widely used than **лотере́я** since these words were borrowed this would explain why the **т** in **лотере́я** is still relatively unassimilated while the **д** in **депре́ссия** is relatively more assimilated. The flaw in this reasoning is obvious, of

course: the **р** in **депре́ссия** should also have had more time to be more assimilated than the one in **лотере́я**, and this is not the case. But did **д** and **р** in **депре́ссия** really have the same amount of time to assimilate? Is the **д** not a part of a common prefix in borrowings, **де-**, as in **детекти́в**, **декольте́** and **деканде́нт**, to name but a few loanwords in our questionnaire?[46] If **де-** is a prefix for most Russian speakers, then it is entirely possible that the **д** could have had more time to assimilate to palatalization than the **р** in **-пре́ссия**, which would explain the conflicting results for configuration (Ré, Tê): we can suppose that the relation Ré > Tê still holds within one word, and if in **депре́ссия** we see Ré < Tê this is due to the fact that the prefix and the root do not show the same degree of assimilation. A hypothesis we can make is that PC's assimilate faster to palatalization before **е** in prefixes than they do in roots. This sounds reasonable; for any word X composed of a prefix X1 and a root X2, the number of words showing prefix X1 is always greater than the number of words showing root X2, so it makes sense to suppose that the prefix has had more time to assimilate than the root has. Let us see if we can find some evidence in our data which supports this.

Even though we have seen that relative rates of assimilation can only meaningfully be compared within one and the same word,[47] we can try to find out if the situation of a PC (whether it is found in a prefix or in a root) has any significant influence on its rate of assimilation. In the list of loanwords we retained for our questionnaire, nine contained prefixes: **резюме́**, **интерпрета́ция**,

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[46] Of course, one could argue that in these examples **де-** is not really an obvious prefix, as there are no other words in Russian ending in **-кольте́**, **-каде́нт** or **-текти́в**. But the fact that **де-** is on the other hand very obviously a prefix in other words, like **демонта́ж** 'dismantling', **дегази́ровать** 'decontaminate', **дезинфе́кция** 'disinfection', etc., and that there is such a word as **репре́ссия**, might be sufficient cause for Russians to treat **де-** and **-пре́ссия** as two independent parts.

[47] See Chapter 2 for a discussion on this subject.

интерфере́нция, репресси́вный, декаде́нт, интерве́нт, репре́ссия, декольте́ and **детекти́в**. Two PC's are involved in these prefixes, **р** and **т/д**. The situation for **р** is what we expected: **р** in prefixes is palatalized in 74.7% of the cases (74 instances out of 99), while in roots only in 53.2% of the cases (158 out of 297). (Actually, it would make more sense to look at cumulative rates in unstressed syllables in roots, since our prefixes appear only in unstressed syllables in our corpus. In such case, we get a ratio of 40.6% = 67/165 for **р** in unstressed roots.) But when we look at **т/д** we see that it is palatalized in 21 instances out of 204 in prefixes, or 10.3% of the time, while in roots we find it palatalized in 55 of 374 cases, or 14.7%, and this ratio even reaches 18.6% when we consider only unstressed syllables in roots. This indicates that, contrary to what we supposed earlier, **т/д** seems to assimilate faster to palatalization in roots than it does in prefixes. But a closer look at our data changes this picture somewhat; **т/д** in **интер-** do not seem to behave like **т/д** in **де-**. In fact, we find the following ratios: $T_{\textbf{интер-}} = 0\%$ and $T_{\textbf{де-}} = 20.6\%$. Thus, $T_{\textbf{де-}} \geq T_{root} > T_{\textbf{интер-}}$ is the inequation suggested by our data.[48] The first part of the inequation, $T_{\textbf{де-}} \geq T_{root}$, is in keeping with the situation that prevails for **р** and with our explanation for the different results obtained by Holden and us with regards to (Ré, Tê), although the difference in the behaviour of **т/д** in the prefix **де-** and in unstressed roots is quite slim. But the second part of the inequation, $T_{root} > T_{\textbf{интер-}}$, was unexpected. Obviously, the degree of assimilation of the prefix **интер-** is very low: Russians tend never to palatalize the **т** in this prefix.[49] There does not seem to be an explanation as to why this prefix is treated differently from other prefixes. Is it possible that the existence of a totally synonymous, and purely

[48] Again we wish to remind the reader that this inequation is based on relative rates which are not meant to be compared except when within a single word.

[49] Avanesov (1983:192) lists 41 words that start with **интер-**: he recommends palatalization of the **т** only for five of them, i.e. **интере́с** and its derivatives, and **интер-** can hardly be seen as a prefix in this case.

Russian, prefix, **между-** (**меж-**), somehow marks its borrowed equivalent as hopelessly foreign? More research is needed to elucidate the particular status of **интер-**, and to find out if there are other prefixes which are similarly treated.

Let us come back now to the analysis of the differences between our conclusions and those of Holden. We just saw that the presence of prefix **де-** in **депре́ссия** could explain why it yielded opposite results to those obtained from analysis of **лотере́я**. We could also suggest that the fact that in the former word **р** follows a stop might make a difference: maybe it is more difficult to perceive (produce?) assimilation of **р** in an environment of the type **-Vпре-** than it is in a **-Vре-** environment, where V stands for any vowel. Only acoustic experimentation could tell us if these two types of environments affect the palatalization of **р**. The other configuration which yielded conflicting results, (Rê, Sé), is on the other hand explained easily. For this configuration the same word (**медресе́**) was used in both cases, so the type of explanation given for (Ré, Tê) could not be considered. In our research, **р** was never palatalized, while **с** was by about half our informants, but this amount is probably somewhat inflated by the fact that in our questionnaire this word was used in the locative case, so that some speakers, unfamiliar with the word, might have thought this word was declined, the final **е** being only a mark of the locative, which therefore should bring palatalization of the preceding consonant. Glovinskaja's informants almost never palatalized either **р** nor **с** in this word, and the difference between the rates was small. (R = (3, 2, 21)[50] and S = (1, 0, 24)) The question is whether this difference is significant or not. Until we get more convincing evidence we will keep our

[50] Here the first number is the number of speakers who pronounced a palatalized consonant, the second number indicates how many used a semi-palatalized consonant, and the third is the amount of instances of non-palatalization.

conclusion that Sé > Rê. But this is further indication that the difference between these two rates is smaller than what our results lead us to believe.

Let us see if generalized word-position independent inequalities derived from the set E) in the same way as what was used for sets A) and C) would be "compatible" with our general conclusions. Holden's inequalities would mean that F > T, L > R, M > R, M > S, M > T, N > R, N ≥ S, R > S and S > T. For (R, T) it is hard to conclude anything from the two tested configurations: but the fact that R > S and S > T implies that R > T, with Tê > Ré being an anomalous configuration. We can sum up Holden's conclusions this way:

F) $\begin{cases} F > T \\ L, M, N > R > S > T \end{cases}$

These conclusions are congruent with our own, except for two details. First of all, we have already seen in discussing the conclusions of our Russian panel that the position we assigned to M in the scale of rates is biased by the fact that we used an anomalous configuration to derive it. Holden says the same thing our panel had already said: м is one of the first PC's to be palatalized, not one of the last as we wrote in B). We already explained in Section 4.1 what caused us to misjudge this consonant's rate of assimilation. The second instance where our scale of rates is in conflict with Holden's is when we say that S > R while he has R > S. Since (R, S) was tested in only one configuration, which yielded conflicting results, as seen in the discussion following E), it is normal that this is also the case here.

F - Revised scale of assimilation rates

In the light of results obtained by our panel and by Holden (1976), we can revise the inequations given in B), which defined a sort of relative scale of assimilation, with PC's easily (or rapidly) palatalized in loanwords having the greatest rates of

assimilation, and those most rarely palatalized having the smallest rates, in the following way:

G) $\begin{cases} P > T \\ N, S > R, F > Mé, T \end{cases}$

More PC-pairs in more configurations should be tested before we can be sure that a scale can be devised that is close to being definitive. It is also suggested that, to minimize palatalization perception problems, the assessment of palatalization should be done by native Russian speakers. For now, with our limited means, this is the clearest picture we can take of the situation of palatalization of consonants in Russian loanwords.

4 - Conclusion

Reflecting on our main goal as stated in the introduction we can say with confidence that this thesis proves beyond doubt that the manner and type of articulation of a consonant and its position in relation to stress has a definite influence on the decision of Russian speakers to palatalize it or not when it is followed by **e** in a loanword. We can say this because of the methodology we used. Because in numerous loanwords one consonant will be palatalized before **e** while another will not we made the assumption that palatalization in loanwords does not only depend on whether a given loanwords was more or less assimilated in the language, but in a more basic way on intrinsic properties of consonants themselves, certain being more "resistant" to assimilation than others. This assumption of course influenced our efforts, the choice of loanwords, and further assumptions, but our results are not only a consequence of it, they also prove we were right in making it. Indeed, if we had found results with many inequations contradicting others, with many words acting as exceptions, with clear cases where consonant A is sometimes more assimilated than consonant B and sometimes less, this would have been proof that the assumption at the basis of our research was wrong and that assimilation was dependent on individual loanwords rather than on the nature of the consonants themselves. Instead, our results show very few contradictions and exceptions, thereby reaffirming that there is a direct relationship between the type of consonant involved and its relative rate of assimilation.

But efforts to determine in what way exactly this influence is felt gave only limited results. We know for certain, and this was proved by others also, that

dental stops **т/д** tend to remain hard[51] even when other consonants are palatalized in the same word. We can also say that the dental nasal **н** is palatalized very often in this situation, probably as often as or more often than any other consonant. Other consonants tend to be palatalized somewhat less often than **н** but more often than **т/д**, except for **м** which seems to be palatalized very often in all positions except in stressed syllables, where it seems to be very rarely palatalized in loanwords. Though other research seems to suggest otherwise, there is good indication that dental fricatives **с/з** are palatalized more often than the roll **р**.

Our conclusions are only partial for many reasons, each of which opens possibilities into further research. A few examples suggest that consonants in specific loanwords (environments?) do not behave as they do in the majority of cases. Dental stops in the stressed syllable of **декаде́нт** and **декольте́** are treated differently by Russian speakers, in the former word more often palatalized than the other stop and in the latter less often palatalized. This might be due to the fact that **декольте́** is undeclinable, but unless further research is done on the palatalization of consonants before the final **е** in undeclinable words we will not know how **т/д** is assimilated to palatalization in different syllables in relation to word stress. Similarly, **с/з** are more or less often palatalized than **р** is before **е** in loanwords, depending on whether we look at the situation in **лотере́я** or in **депре́ссия**, although this case could be explained by the presence of a prefix in the latter word, as our results tend to prove that consonants tend to assimilate faster to palatalization in prefixes than they do in roots.

Once exceptions have been explained, and additional configurations and PC-pairs have been tested to provide a more complete scale of consonants with

[51] We mean, but will not repeat systematically, "when followed by **е**".

regards to palatalization in loanwords, there will be ample material for another thesis that would look into the way Russian speakers, native and non-native, perceive palatalization. This question was not covered by us in the planning stages of our thesis but became acute when we decided to check how accurate we were when trying to identify palatalization. It now seems to us that Russians and foreigners perceive palatalization in a very different way, based on what we found in Chapter 3. While we expected some differences in perception, the extent of the "disagreement" and the consistency of the results—when our panel disagreed with us it was always perceiving palatalization where we heard none, never the other way around—surprised us and forced us to reflect on this variable which we had simply not considered. We believe there is an explanation, but it is only hypothetical: we think that Russians, for whom palatalization is "natural" before **е**, would have a tendency to hear palatalization in this position except when it is very clear that there is not, while non-native speakers, for whom palatalization is not "natural", or for whom it is not widespread, would tend not to hear any palatalization unless it was clear that there was. In other words, native and non-native speakers would assign a different "default value" to sounds they hear. In this way, audibly clear instances of soft and hard consonants would be recognized for what they are by both groups, but sounds more difficult to assess regarding palatalization, like **м** or **ф/в** or **с/з** in unstressed syllables, would be assigned a default value of "palatalized" by Russians and "non-palatalized" by non-native speakers. This hypothesis is certainly consistent with the pattern we observed in our sample. This possible difference in perception was a major reason for the incompleteness of our results, as was our inability to measure palatalization in an objective, mechanical way, as we had to abandon part of our data to get results that would reflect as much as

possible the impression of Russian speakers when having to decide whether to use palatalization in loanwords.

At least one other variable could be tested to see if it has an effect on the decision of Russians to palatalize consonants in loanwords: the existence of derivationally related words with mobile stress. Our data included one pair of such words belonging to one family, **репре́ссия** and **репресси́вный**. We may wonder whether the choice to palatalize or not to palatalize consonants in such groups of related words is really a function of their relative position to stress, or if it will not tend to remain constant, regardless of where the stress is located. Unfortunately, inclusion of this one pair of words did not enable us to answer this question, but systematic testing of a large number of derivationally related words might help us understand to what extent a theoretical scale of consonants would have to be modified to take into account their influence.

These factors limiting the completeness of the scale of consonants we devised are real, but with additional experimentation can be made to disappear or diminish. The ideal experiment would feature high-quality recordings, and native Russian speakers would make the palatalization judgements. The amount of informants should be larger, and so should the sample of words tested, while we would get rid of any possible influence of the foreign-language milieu where our informants live by recording Russians living in Russia. It would be beneficial to compare the results of such an experiment with an analysis of prescribed palatalization of consonants in dictionaries such as Avanesov (1983). Preliminary research into the roles of prefixes and groups of derivationally related words in influencing palatalization would be necessary before any attempt to derive a definitive scale of palatalizable consonants. Finally, in an ideal experiment we would record each informant at least three times, so as to obviate the assumption

we made that Russians tend to make the same choices every time when deciding whether to palatalize a consonant or not in a loanword. This assumption was necessary for this experiment, but it is evidently false. Any general theory about assimilation of consonants to palatalization in loanwords would have to include the uncertainty variable. Not only do some consonants "resist" assimilation longer than others, but it is quite possible that some consonants induce more hesitation in speakers than others. It is however more probable that hesitation in loanwords depends on loanwords as a whole and not on consonants: speakers would hesitate more when pronouncing rare, unheard loanwords, not when seeing such and such a consonant. If this is the case, a complete scale of consonants, from the most assimilated to the least, is certainly possible, but it would always remain a theoretical tool, because in practice a Russian speaker would modify the rates of assimilation of consonants by the hesitation factor of the word they are found in.

Of course, this hypothesis is based more on intuition than on facts, and we do not even know if it is scientific, that is if there can be devised an experiment to validate or invalidate it. We leave this task to others.

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Appendix

Alphabetical list of words with two e's

Абсентеи́зм	Дебаркаде́р	Интерве́нт
Абсентеи́ст	Дебарка́дер	Интервенциони́зм
Аллегре́тто	Де́бет	Интервенциони́ст
Анестезио́лог	Дебетова́ть	Интервенционисти́ческий
Анестезиологи́ческий	Дебето́вый	Интерве́нция
Анестезио́логия	Дегенера́ция	Интерви́дение
Анестези́ровать	Дезидера́ты	Интермеди́йный
Анестези́я	Дезинсекта́ль	Интерме́дия
Археоптери́кс	Дезинсекта́нт	Интерме́ццо
Ассе́мблер	Дезинсе́ктор	Интерпелли́ровать
Бебе́	Дезинсекцио́нный	Интерпелля́ция
Беде́кер	Дезинсе́кция	Интерпрета́тор
Безе́	Дейте́рий	Интерпрета́ция
Бельведе́р	Декаде́нт	Интерпрети́ровать
Бе́ре	Декамеви́т	Интерфе́йс
Бестсе́ллер	Декаме́тр	Интерфере́нция
Бе́тель	Декольте́	Интерферо́н
Бетэ́ль	Деликате́с	Исте́блишмент
Бизнесме́н	Де́мпфер	Ительме́нский
Бре́йкер	Депресси́вный	Ительме́ны
Бре́мсберг	Депре́ссия	Каберне́
Бретэ́ли	Детекти́в	Катэ́тер
Бретэ́льки	Детэ́ктор	Ка́нтеле
Бульдене́ж	Детермини́ст	Кафете́рий
Бундесве́р	Детерминисти́ческий	Кибернэ́тик
Вадеме́кум	Дефензи́ва	Кибернэ́тика
Вендэ́тта	Дефибре́р	Кибернэти́ческий
Ве́стерн	Дефиле́	Конве́ртер
Ге́йзер	Дефро́стер	Конгрессме́н
Гелэ́терский	Децибе́л	Консеквэ́нтный
Геликоптэ́р	Дециме́тр	Контэ́йнер
Ге́незис	Дециметро́вый	Контейнеризация
Генэ́тик	Де-ю́ре	Контейнерово́з
Генэ́тика	Диспе́нсер	Конфедера́т
Генети́ческий	Дре́зденский	Кордебалэ́т
Германе́втика	Заштемпелева́ть	Кре́йсер
Герудотерапи́я	Заштемпелёвыбать	Ледери́н
Гетэ́ра	Индетермини́ст	Ле́йденский
Гетероге́нный	Индетерминисти́ческий	Лексе́ма
Гетеросексуали́ст	Иннебе́нди	Лотере́я
Гре́йдер	Интервени́ровать	

Alphabetical list of words with two e's

Мадемуазе́ль	Рейсфе́дер	Тенденцио́зный
Медресе́	Ре́йтер	Тенде́нция
Меланези́йский	Рейхсве́р	Те́ндер
Менделе́вий	Реле́	Теофедри́н
Менделе́вий	Реле́йный	Терапе́вт
Ме́неджер	Ренессáнс	Терапевти́ческий
Менестре́ль	Реноме́	Термоя́дерный
Метате́за	Репрессáлии	Те́стер
Метре́сса	Репрессúвный	Тетрáметр
Метрополите́н	Репрессúровать	Тетраметри́ческий
Мизере́ре	Репре́ссия	Тите́стер
Неандерта́лец	Рефлексотерапе́вт	Тре́йлер
Неандерта́льский	Ротефе́ллы	Федерализáция
Несессе́р	Седуксе́н	Ферералúзм
Новелле́тта	Секрете́р	Федералúст
Новелле́тта	Сексотерапе́вт	Федератúвный
Пе́дель	Сенешáль	Федерáция
Педерáст	Сентенцио́зный	Фешене́бельный
Педерасти́ческий	Сенте́нция	Филогене́з
Педерáстия	Сентименталúзм	Фильдепе́рс
Пенсне́	Сентименталúст	Фре́йлейн
Песе́та	Сентиментáльничать	Фре́кен
Плере́зы	Сентиментáльность	Хе́дер
Пре́зенс	Сентиментáльный	Хеймве́р
Пресви́тер	Сентиментáльщина	Хе́тчбек
Пресвитериáнец	Септе́т	Холестери́н
Пресвитериáнин	Серадéлла	Ште́вень
Пресвитериáнство	Сервелáт	Ште́йгер
Претéнзия	Сесте́рций	Ште́кер
Претенцио́зный	Се́ттер	Штемпелевáльный
Пропеде́втика	Сеттерóк	Штемпелевáть
Пропедевти́ческий	Се́ттльмент	Штемпелёк
Проштемпелевáть	Ске́ннер	Ште́мпель
Проштемпелёвывать	Склеродéрма	Штепселёк
Регре́сс	Сне́ппер	Ште́псель
Регрессúвный	Студебе́ккер	Эдельве́йс
Резерпúн	Суперинтендáнт	Энергети́ка
Резюме́	Супермéн	Энергети́ка
Ре́йгангейт	Сюзере́н	Энергети́ческий
Ре́йдер	Те́мпера	Эпенте́за
Рейнве́йн	Темперúровать	Эпентети́ческий

Table 1

A) Intra-dentals

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
т	т	NA	NA	NA
д	т	Дейте́рий Дете́ктор	Декольте́	Детекти́в
т	д	Тенде́нция	NA	Тендера́
д	д	NA	Декаде́нт	NA
с	с	Несессе́р	Седуксе́н	NA
з	с	NA	NA	NA
с	з	NA	NA	NA
з	з	NA	NA	NA
с	т	Сенте́нция Септе́т Сесте́рций	Секрете́р	Абсентеи́зм Абсентеи́ст Сеттера́ Сеттеро́к
з	т	NA	NA	NA
с	д	NA	Серadéлла	NA
з	д	NA	NA	NA
д	з	NA	NA	NA
д	с	NA	Дезинсе́ктор Дезинсе́кция	NA
т	з	NA	NA	NA
т	с	NA	NA	Штепселёк Штепселя́

B) Intra-labials

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
п	п	NA	NA	NA
б	п	NA	NA	NA
п	б	NA	NA	NA
б	б	Бебе́	NA	NA
ф	ф	NA	NA	NA
в	ф	NA	NA	NA
ф	в	NA	NA	NA
в	в	NA	NA	NA
ф	п	NA	NA	NA
в	п	NA	NA	NA
ф	б	NA	NA	NA
в	б	NA	NA	NA
п	ф	NA	NA	NA
б	ф	NA	NA	NA
п	в	NA	NA	NA
б	в	NA	NA	Бельведе́р

Table 1

C) Intra-velars

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
к	к	NA	NA	NA
г	к	NA	NA	NA
к	г	NA	NA	NA
г	г	NA	NA	NA
х	х	NA	NA	NA
х	к	NA	NA	NA
х	г	NA	NA	NA
г	х	NA	NA	NA
к	х	NA	NA	NA

D) Intra-resonants

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
н	н	NA	NA	NA
р	н	NA	NA	Ренессáнс
л	н	NA	NA	NA
н	л	NA	NA	NA
р	л	Релé(йный)	NA	NA
л	л	NA	NA	NA
н	р	Менестрéль	NA	NA
р	р	Регрéсс Репрéссия	NA	Регрессúвный Репрессáлии Репрессúвный Репрессúровать
л	р	Аллегрéтто Плерéзы	NA	NA
м	м	NA	NA	NA
м	н	Германéвтика	NA	Менестрéль
м	р	Метрéсса	Менестрéль	Медресé
м	л	NA	NA	NA
н	м	Бизнесмéн	NA	NA
р	м	Конгрессмéн	Резюмé Реномé	NA
л	м	NA	NA	NA

Table 1

E) Dentals vs Labials

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
п	т	Эпенте́за	NA	Эпентети́ческий
б	т	Бете́ль	NA	NA
ф	т	Кафете́рий	NA	NA
в	т	NA	NA	NA
п	д	Пропеде́втика	NA	Педеля́ Педера́ст(ия) Пропедевти́ческий
б	д	Беде́кер	Бельведе́р	NA
ф	д	NA	NA	Конфедера́т Федера́льный Федера́ция
в	д	Бельведе́р Вендетта	NA	NA
п	с	Песе́та	NA	NA
б	с	Бестсе́ллер	NA	NA
ф	с	NA	NA	NA
в	с	NA	NA	NA
п	з	NA	NA	NA
б	з	Безе́	NA	NA
ф	з	NA	NA	NA
в	з	NA	NA	NA
т	п	NA	Терапе́вт	Заштемпелёвывать Заштемпелю́ю Интерпелли́ровать Интерпелля́ция Проштемпелёвывать Проштемпелю́ю Темпери́ровать Штемпелёк Штемпеля́
д	п	Фильдепе́рс	NA	NA
с	п	NA	NA	NA
з	п	NA	NA	NA
т	б	NA	NA	NA
д	б	Студебе́ккер	Децибе́л	Дебето́вый Дебету́ю
с	б	NA	NA	NA
з	б	NA	NA	NA
т	ф	Интерфе́йс Ротефе́ллы	NA	Интерфере́нция Интерферо́н
д	ф	NA	NA	Демпфера́ Дефензи́ва
с	ф	NA	NA	NA
з	ф	NA	NA	NA

Table 1

E) Dentals vs Labials continued

т	в	Интерве́нт Интерве́нция	NA	Интервени́ровать
д	в	Бундесве́р Эдельве́йс	NA	NA
с	в	Консекве́нтный	NA	Сервела́т
з	в	NA	NA	NA

F) Dentals vs Velars

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
к	т	NA	NA	NA
г	т	Гете́ра	NA	NA
х	т	NA	Археопте́рикс	NA
к	д	NA	NA	NA
г	д	NA	NA	NA
х	д	NA	NA	Хедера́
к	с	NA	NA	NA
г	с	NA	NA	NA
х	с	NA	NA	NA
к	з	NA	NA	NA
г	з	NA	NA	NA
х	з	NA	NA	NA
т	к	NA	NA	Штекера́
д	к	NA	NA	NA
с	к	NA	NA	NA
з	к	NA	NA	NA
т	г	NA	Гетероге́нный	NA
д	г	NA	NA	NA
с	г	NA	NA	NA
з	г	NA	NA	NA
т	х	NA	NA	NA
д	х	NA	NA	NA
с	х	NA	NA	NA
з	х	NA	NA	NA

Table 1

G) Dentals vs Resonants

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
н	т	NA	NA	Анестези́ровать Анестези́я
р	т	Бретéли Бретéльки Претéнзия Секретéр	NA	NA
л	т	NA	NA	Холестери́н
м	т	NA	Метатéза	NA
н	д	NA	NA	NA
р	д	NA	NA	Грейдера́
л	д	NA	Склеродéрма	Ледери́н
м	д	NA	NA	Менделизм Менделист
н	с	NA	Несессéр	Несессéр
р	с	Медресé	NA	Крейсера́
л	с	Лексéма	NA	NA
м	с	NA	Медресé	NA
н	з	NA	NA	NA
р	з	NA	NA	Резерпи́н
л	з	NA	NA	NA
м	з	NA	NA	NA
т	н	NA	NA	NA
д	н	Бульденéж	NA	NA
с	н	NA	NA	Сенеша́ль
з	н	NA	NA	NA
т	р	Лотерéйный Лотерéя	Интерферéнция	Интерпрета́тор Интерпрета́ция Интерпрети́ровать
д	р	Депрéссия	Дефибрéр	Депресси́вный
с	р	NA	NA	Секретéр
з	р	Мизерéре Сюзерéн	NA	NA
т	л	NA	NA	NA
д	л	NA	Дефилé Кордебалéт	NA
с	л	NA	NA	NA
з	л	NA	NA	NA
т	м	Ительмéн(ский) Интермéдия Интермéццо	NA	Интермедийный
д	м	Вадемéкум	Декамéтр Децимéтр	NA
с	м	NA	NA	NA
з	м	NA	NA	NA

Table 1

H) Labials vs Velars				
a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
к	п	NA	NA	NA
г	п	NA	NA	NA
х	п	NA	NA	NA
к	б	NA	NA	NA
г	б	NA	NA	NA
х	б	NA	NA	NA
к	ф	NA	NA	NA
г	ф	NA	NA	NA
х	ф	NA	NA	NA
к	в	NA	NA	NA
г	в	NA	NA	NA
х	в	Хеймве́р	NA	NA
п	к	NA	NA	NA
б	к	NA	NA	NA
ф	к	NA	NA	NA
в	к	NA	NA	NA
п	г	NA	NA	NA
б	г	NA	NA	NA
ф	г	NA	NA	NA
в	г	NA	NA	NA
п	х	NA	NA	NA
б	х	NA	NA	NA
ф	х	NA	NA	NA
в	х	NA	NA	NA

Table 1

I) Labials vs Resonants

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
н	п	NA	NA	NA
р	п	NA	NA	NA
л	п	NA	NA	NA
м	п	NA	NA	NA
н	б	Иннебе́нди	NA	NA
р	б	NA	NA	NA
л	б	NA	NA	NA
м	б	NA	NA	NA
н	ф	NA	NA	NA
р	ф	Рейсфе́дер	NA	NA
л	ф	NA	NA	NA
м	ф	NA	NA	NA
н	в	NA	NA	NA
р	в	Рейнве́йн Рейхсве́р	NA	NA
л	в	NA	NA	NA
м	в	NA	NA	NA
п	н	Пенсне́	NA	NA
б	н	Каберне́ Киберне́тик(а)	NA	Кибернети́ческий
ф	н	NA	Фешене́бельный	NA
в	н	NA	NA	NA
п	р	NA	NA	NA
б	р	NA	NA	NA
ф	р	Интерфере́нция	NA	NA
в	р	NA	NA	NA
п	л	NA	NA	(За)штемпелева́ть Проштемпелева́ть Штемпелева́льный
б	л	NA	NA	NA
ф	л	NA	NA	NA
в	л	Новел(л)е́тта	NA	NA
п	м	Супермен(ша)	NA	NA
б	м	NA	NA	NA
ф	м	NA	NA	NA
в	м	NA	NA	NA

Table 1

J) Velars vs Resonants

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
л	к	NA	NA	NA
р	к	NA	NA	NA
н	к	NA	NA	NA
м	к	NA	NA	NA
л	г	NA	NA	NA
р	г	NA	NA	NA
н	г	Энерге́тик(а)	NA	Энергети́ческий
м	г	NA	NA	NA
л	х	NA	NA	NA
р	х	NA	NA	NA
н	х	NA	NA	NA
м	х	NA	NA	NA
к	л	NA	NA	NA
г	л	Геле́терский	NA	NA
х	л	NA	NA	NA
к	р	NA	NA	NA
г	р	NA	NA	NA
х	р	NA	NA	NA
к	н	NA	NA	NA
г	н	Гене́тик(а) Филогене́з	Германе́втика	Генети́ческий Дегенера́ция
х	н	NA	NA	NA
к	м	NA	NA	NA
г	м	NA	NA	Германе́втика
х	м	NA	NA	NA

Table 2

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
т/д	т/д	Дейте́рий	Декаде́нт	Детекти́в
		Дете́ктор	Декольте́	Тендера́
		Тенде́нция		
с/з	с/з	Несессе́р	Седуксе́н	NA
с/з	т/д	Сенте́нция	Секрете́р	Абсентеи́зм
		Септе́т	Серале́лла	Абсентеи́ст
		Сесте́рций		Сеттера́
				Сеттербк
т/д	с/з	NA	Дезинсе́ктор	Штепселёк
			Дезинсе́кция	Штепселя́
п/б	п/б	Бебе́	NA	NA
ф/в	ф/в	NA	NA	NA
ф/в	п/б	NA	NA	NA
п/б	ф/в	NA	NA	Бельведе́р
н	н	NA	NA	NA
р	н	NA	NA	Ренессáнс
л	н	NA	NA	NA
н	л	NA	NA	NA
р	л	Реле́(йный)	NA	NA
л	л	NA	NA	NA
н	р	Менестре́ль	NA	NA
р	р	Регре́сс	NA	Регресси́вный
		Репре́ссия		Репрессáлии
				Репресси́вный
				Репресси́ровать
л	р	Аллегре́тто	NA	NA
		Плере́зы		
м	м	NA	NA	NA
м	н	Германе́втика	NA	Менестре́ль
м	р	Метре́сса	Менестре́ль	Медресе́
м	л	NA	NA	NA
н	м	Бизнесме́н	NA	NA
р	м	Конгрессме́н	Резюме́	NA
			Реноме́	
л	м	NA	NA	NA
п/б	т/д	Беде́кер	Бельведе́р	Педеля́
		Бете́ль		Педера́ст(ия)
		Пропеде́втика		Пропедевти́ческий
		Эпенте́за		Эпентети́ческий
ф/в	т/д	Бельведе́р	NA	Конфедера́т
		Вендéтта		Федера́льный
		Кафете́рий		Федера́ция
п/б	с/з	Безе́	NA	NA
		Бестсе́ллер		
		Песе́та		
ф/в	с/з	NA	NA	NA

Table 2

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
т/д	п/б	Студебе́ккер	Децибе́л	Дебето́вый
		Фильдепе́рс	Терапе́вт	Дебету́ю
				Заштемпелёвывать
				Заштемпелю́ю
				Интерпелли́ровать
				Интерпелля́ция
				Проштемпелёвывать
				Проштемпелю́ю
				Темпери́ровать
				Штемпелёк
				Штемпеля́
с/з	п/б	NA	NA	NA
т/д	ф/в	Бундесве́р	NA	Демпфера́
		Интерве́нт		Дефензи́ва
		Интерве́нция		Интервени́ровать
		Интерфе́йс		Интерфере́нция
		Ротефе́ллы		Интерферо́н
		Эдельве́йс		
с/з	ф/в	Консеквентный	NA	Сервела́т
н	т/д	NA	NA	Анестези́ровать
				Анестези́я
р	т/д	Бретéли	NA	Грейдера́
		Бретéльки		
		Претéнзия		
		Секретéр		
л	т/д	NA	Склеродéрма	Ледери́н
				Холестери́н
м	т/д	NA	Метатéза	Менделе́изм
				Менделе́ист
н	с/з	NA	Несессе́р	Несессе́р
р	с/з	Медресé	NA	Крейсера́
				Резерпи́н
л	с/з	Лексéма	NA	NA
м	с/з	NA	Медресé	NA
т/д	н	Бульденéж	NA	NA
с/з	н	NA	NA	Сенеша́ль
т/д	р	Депрéссия	Дефибре́р	Депресси́вный
		Лотерéйный	Интерфере́нция	Интерпрета́тор
		Лотерéя		Интерпрета́ция
				Интерпрети́ровать
с/з	р	Мизере́ре	NA	Секрете́р
		Сюзере́н		
т/д	л	NA	Дефиле́	NA
			Кордебале́т	
с/з	л	NA	NA	NA
т/д	м	Вадеме́кум	Декаме́тр	Интермеди́йный
		Ительме́н(ский)	Дециме́тр	
		Интерме́дия		
		Интерме́ццо		

Table 2

a	b	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
с/з	м	NA	NA	NA
н	п/б	Иннебе́нди	NA	NA
р	п/б	NA	NA	NA
л	п/б	NA	NA	NA
м	п/б	NA	NA	NA
н	ф/в	NA	NA	NA
р	ф/в	Рейнве́йн Рейсфе́дер Рейхсве́р	NA	NA
л	ф/в	NA	NA	NA
м	ф/в	NA	NA	NA
п/б	н	Каберне́ Киберне́тик(а) Пенсне́	NA	Кибернети́ческий
ф/в	н	NA	Фешене́бельный	NA
п/б	р	NA	NA	NA
ф/в	р	Интерфере́нция	NA	NA
п/б	л	NA	NA	(За)штемпелева́ть Проштемпелева́ть Штемпелева́льный
ф/в	л	Новел(л)е́тта	NA	NA
п/б	м	Супермен(ша)	NA	NA
ф/в	м	NA	NA	NA

Table 3

(a, b)	a- First pretonic b- Stressed	a- Pretonic (not first) b- Stressed	a- Pretonic (not first) b- First pretonic
	Дейте́рий	Декаде́нт	Детекти́в
(т/д, т/д)	Дете́ктор	Декольте́	Тендера́
	Тенде́нция		
(с/з, с/з)	Несессе́р	Седуксе́н	NA
(с/з, т/д)			Абсентеи́зм
		Дезинсе́ктор	Абсентеи́ст
or	Сенте́нция	Дезинсе́кция	Сеттера́
	Септе́т	Секрете́р	Сеттеро́к
(т/д, с/з)	Сесте́рций	Сераде́лла	Штепселёк
			Штепселя́
(р, н)			
(н, р)	Менестре́ль	NA	Ренесса́нс
			Регресси́вный
	Регре́сс		Репресса́лии
(р, р)	Репре́ссия	NA	Репресси́вный
			Репресси́ровать
(р, л)	Аллегре́тто	NA	NA
or	Плере́зы		
(л, р)	Реле́(йный)		
(м, н)	Бизнесме́н	NA	Менестре́ль
(н, м)	Германе́втика		
(м, р)		Менестре́ль	
or	Конгрессме́н	Резюме́	Медресе́
(р, м)	Метре́сса	Реноме́	
			Дебето́вый
			Дебету́ю
			Заштемпелёвывать
			Заштемпелю́ю
(п/б, т/д)			Интерпелли́ровать
	Беде́кер		Интерпелля́ция
	Бете́ль	Бельведе́р	Педеля́
or	Пропеде́втика	Деципе́л	Педера́ст(ия)
	Студебе́ккер	Терапе́вт	Пропедевти́ческий
	Фильдепе́рс		Проштемпелёвывать
	Эпенте́за		Проштемпелю́ю
(т/д, п/б)			Темпери́ровать
			Штемпелёк
			Штемпеля́
			Эпентети́ческий
	Бельведе́р	NA	Демпфера́
	Бундесве́р		Дефензи́ва
(ф/в, т/д)	Вендетта		Интервени́ровать
	Интерве́нт		Интерфере́нция
or	Интерве́нция		Интерферо́н
	Интерфе́йс		Конфедера́т
(т/д, ф/в)	Кафете́рий		Федера́льный
	Ротефе́ллы		Федера́ция
	Эдельве́йс		

Table 3

(с/з, ф/в)	Консеквéнтный	NA	Сервелáт
(н, т/д)	Бульденéж	NA	Анестезúровать
(т/д, н)			Анестезúя
	Бретéли		
(р, т/д)	Бретéльки		Грейдерá
	Депрéссия		Депрессúвный
or	Лотерéйный	Дефибрéр	Интерпретáтор
	Лотерéя	Интерферéнция	Интерпретáция
(т/д, р)	Претéнзия		Интерпретúровать
	Секретéр		
(л, т/д)		Дефилé	
or	NA	Кордебалéт	Ледерúн
(т/д, л)		Склеродéрма	Холестерúн
	Вадемéкум		
(м, т/д)	Ительмéн(ский)	Декамéтр	Интермедúйный
or	Интермéдия	Децимéтр	Менделúзм
(т/д, м)	Интермéццо	Метатéза	Менделúст
(н, с/з)	NA	Несессéр	Несессéр
(с/з, н)			Сенешáль
(р, с/з)	Медресé		Крейсерá
or	Мизерéре	NA	Резерпúн
(с/з, р)	Сюзерéн		Секретéр
	Иннебéнди		
(н, п/б)	Каберné		
or	Кибернéтик(а)	NA	Кибернетúческий
(п/б, н)	Пенсné		
	Интерферéнция		
(р,ф/в)	Рейнвéйн		
or	Рейсфéдер	NA	NA
(ф/в, р)	Рейхсвéр		

How to use this table.

Below is a list of our target loanwords with comparison of our judgments regarding palatalization (in parentheses) with those of our Russian panel:
+ = +pal; – = -pal; ? = impossible to determine.

For every PC of every loanword, + and – values are arranged in six rows, corresponding to the six speakers selected randomly for our sample, and in four columns, the first three of which corresponding to the decisions of the three members of the panel, while the fourth one, in parentheses, corresponds to our personal judgments.

An asterisk is present to the right of our judgments every time we are "wrong", as defined in chapter 2.

Table 4

Loanwords	2nd pre-stressed	1st pre-stressed	Stressed syllable
резюме́	+ + + (+)		– – – (–)
	+ + + (+)		– – + (–)
	+ + + (+)		– – – (–)
	+ + + (+)		+ + + (–)*
	+ + + (–)*		– – – (–)
	– – – (–)		– – – (–)
сюзере́нов		+ – + (–)*	– – – (–)
		+ – + (–)*	– – – (–)
		+ + + (–)*	– – – (–)
		+ + + (+)	+ + + (+)
		+ + + (–)*	– + + (+)
		+ – + (–)*	– – – (–)
грейдера́	+ + + (–)*	– – – (–)	
	+ + + (–)*	– – – (–)	
	+ + + (–)*	– – – (–)	
	+ + + (–)*	+ – – (–)	
	– – – (–)	– – – (–)	
	+ – – (–)	– – – (–)	

Table 4

Loanwords	2nd pre-stressed	1st pre-stressed	Stressed syllable
кибернети́ческой	+ + + (–)*	+ – – (+)*	
	+ + + (–)*	+ ? ? (–)*	
	+ + + (–)*	+ + – (–)*	
	+ + + (–)*	+ + – (–)*	
	+ + + (+)	+ + ? (+)	
	+ + + (–)*	– + – (–)	
герме́невтики	The consonant г is not considered	+ ? + (+)	– – – (–)
		+ + + (–)*	– – – (–)
		+ – + (–)*	– – – (–)
		+ + + (+)	+ + + (+)
		+ – + (–)*	– – – (–)
		+ + + (–)*	– – – (–)
интерпрета́ции	– – – (–)	+ + + (+)	
	– – – (–)	+ + + (+)	
	+ – – (–)	+ + + (+)	
	– – – (–)	+ + + (–)*	
	– – – (–)	+ + + (+)	
	– – – (–)	+ + + (+)	
сенте́нциями		+ + + (–)*	– – – (–)
		+ + + (–)*	– – – (–)
		+ + + (–)*	– – – (–)
		+ + + (+)	– – – (–)
		– + + (–)*	– – – (–)
		+ – + (–)*	– – – (–)
лотере́и		– – – (–)	+ + + (+)
		+ + + (+)	+ + + (+)
		– – – (–)	+ + + (+)
		– – – (–)	+ + + (+)
		– – – (–)	+ + + (+)
		+ + + (+)	+ + + (+)
интерфере́нции	+ + – (–)*	+ + + (+)	+ + + (+)
	+ – – (–)	+ + + (+)	+ + + (+)
	+ – – (–)	+ + + (+)	+ + + (+)
	– – – (–)	+ + + (–)*	+ + + (+)
	– – ? (–)	– – + (–)	– – ? (–)
	– – – (–)	+ – – (–)	– – – (–)

Table 4

Loanwords	2nd pre-stressed	1st pre-stressed	Stressed syllable
несессе́р	+ – – (–)	+ – – (–)	– – – (–)
	+ – – (–)	+ – – (–)	– – – (–)
	+ – – (–)	– – – (–)	+ – – (–)
	+ + + (–)*	+ + – (–)*	– – + (–)
	+ – + (–)*	– + – (–)	– – – (–)
	+ – – (–)	– – – (–)	– + – (–)
секрете́ру	+ – + (–)*	+ – + (–)*	– – – (–)
	+ + + (–)*	+ + + (–)*	– – – (–)
	+ + + (–)*	+ + + (–)*	– – – (–)
	+ + + (+)	+ + + (+)	– – – (–)
	+ + + (+)	+ – + (+)	– – – (–)
	+ + + (+)	+ + + (+)	– – – (–)
репресси́вных	+ + + (+)	+ + + (+)	
	– – – (–)	+ – – (–)	
	+ + + (+)	+ + + (+)	
	+ + + (+)	+ + + (–)*	
	– – – (–)	+ – – (–)	
	– – – (+)*	+ + + (+)	
менестре́лей	+ + + (+)	+ + + (+)	– – – (+)*
	+ – + (–)*	+ – – (–)	– – – (+)*
	+ – + (–)*	+ – ? (–)	– – – (–)
	+ + + (+)	+ + + (+)	+ + + (–)*
	+ – + (–)*	+ – + (–)*	– – – (–)
	+ + + (–)*	+ + + (–)*	– + + (+)
федера́ции	+ ? + (+)	– – – (–)	
	+ – + (+)	– – ? (–)	
	+ – + (+)	– – – (–)	
	+ + + (–)*	+ + + (–)*	
	+ + + (+)	+ + + (–)*	
	+ + + (+)	+ + + (+)	
метре́ссы		+ + + (–)*	– – – (–)
		+ + + (–)*	– – – (–)
		+ + + (–)*	– – + (–)
		+ + + (–)*	+ – + (–)*
		+ – + (–)*	– – + (–)
		– + + (–)*	– – – (–)

Table 4

Loanwords	2nd pre-stressed	1st pre-stressed	Stressed syllable
сеттера́	+ + + (–)*	– – – (–)	
	– – – (–)	– – – (–)	
	– + + (–)*	– – – (–)	
	+ + + (–)*	– – – (–)	
	+ ? ? (–)*	– – – (–)	
	– + – (–)	– + – (–)	
декаде́нтов	– – – (–)		– – – (–)
	– – – (–)		– – – (–)
	– – – (–)		– – – (–)
	+ + + (–)*		+ + + (+)
	+ – + (–)*		– – – (–)
	+ + + (–)*		+ + + (+)
тенде́нции		– – – (–)	– – – (–)
		– – – (–)	– – – (–)
		– – – (–)	– – – (–)
		+ – + (–)*	+ + + (+)
		– – – (–)	– – – (–)
		– – – (–)	– – – (–)
абсентеи́зму	+ + + (–)*	– – – (–)	
	– + + (–)*	– – – (–)	
	– – + (–)	– – – (–)	
	+ + – (–)*	+ + + (+)	
	– + + (–)*	– – – (–)	
	– – + (–)	– – – (–)	
интерве́нтам		– – – (–)	+ + + (+)
		– – – (–)	+ + + (+)
		– – – (–)	– – – (–)
		– – – (–)	+ + + (+)
		– – – (–)	+ + + (+)
		– – – (–)	+ + + (+)
киберне́тики		+ + + (–)*	– + – (–)
		+ + + (–)*	– + – (–)
		+ + + (–)*	– + – (–)
		+ + + (–)*	– + – (–)
		+ + + (–)*	– + – (–)
		+ + + (–)*	– – – (–)

Table 4

Loanwords	2nd pre-stressed	1st pre-stressed	Stressed syllable
крейсера́	+ + − (−)*	+ − − (−)	
	+ − − (−)	− + ? (−)	
	+ + + (−)*	+ + + (−)*	
	+ − − (−)	+ + + (−)*	
	− − − (−)	+ + + (−)*	
	+ − + (+)	+ + + (+)	
штемпеля́	− − − (−)	+ + + (−)*	
	− − − (−)	+ + + (+)	
	− − − (−)	+ + + (−)*	
	− − − (−)	+ + + (−)*	
	− − − (−)	+ + + (−)*	
	− − − (−)	+ + + (−)*	
репре́ссии		+ + + (+)	+ + + (+)
		+ + + (+)	+ + + (+)
		+ + + (+)	+ + + (+)
		+ + + (+)	− + − (−)
		− + + (+)	− + − (−)
		+ + + (+)	+ + + (+)
медресе́	+ + + (−)*	+ − − (−)	− − + (−)
	+ − + (−)*	+ − − (−)	− − − (−)
	+ − + (−)*	+ + + (−)*	− + + (−)*
	+ + + (−)*	+ + + (−)*	+ + + (+)
	+ + ? (−)*	− − − (−)	+ + + (+)
	+ + + (−)*	− − − (−)	+ + + (−)*
бельведе́ром	+ + + (−)*	+ − + (−)*	− − − (−)
	+ + + (+)	+ + + (+)	− − − (−)
	+ + + (−)*	− + ? (−)	− − − (−)
	+ + + (−)*	+ − + (−)*	− − − (−)
	− − − (−)	− + + (−)*	− − − (−)
	+ + + (−)*	− + − (−)	− − − (−)
терапе́вт	− − − (−)		+ + + (+)
	− − − (−)		+ + + (+)
	− − − (−)		− + + (+)
	− − − (−)		+ + + (+)
	+ + + (+)		− + + (−)*
	+ + + (+)		+ + + (+)

Table 4

Loanwords	2nd pre-stressed	1st pre-stressed	Stressed syllable
декольте́	+ – – (–)		– – – (–)
	– – – (–)		– – – (–)
	– – – (–)		– – – (–)
	– – – (–)		– – – (–)
	+ + + (+)		– – – (–)
	– – – (–)		– – – (–)
детекти́вы	+ – – (–)	– – – (–)	
	– – – (–)	– – – (–)	
	+ + + (+)	+ + + (+)	
	– – – (–)	– – – (–)	
	– – – (–)	– – – (–)	
	– – – (–)	– – – (–)	